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GOVERNMENT REPORTS

ANNOUNCEMENTS & INDEX

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August 8, 1975

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NTIS
U.S. DEPARTMENT OF COMMERCE
National Technical Information Service

GOVERNMENT REPORTS
ANNOUNCEMENTS & INDEX

Published every two weeks by the National Technical Information Service (NTIS). Annual subscription rates:

Government Reports Announcements & Index
Domestic $125 Foreign $160
Canada and Mexico $150

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U.S. DEPARTMENT OF COMMERCE
Rogers C. B. Morton, Secretary
NATIONAL TECHNICAL INFORMATION SERVICE
William T. Knox, Director

The Secretary of Commerce has determined that the publication of this periodical is necessary in the transaction of the public business required by law of this department. Use of funds for printing this periodical has been approved by the Director of the Office of Management and Budget through March 1, 1978.

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Announcements in this journal are arranged in the 22 subject fields recommended in the "Committee on Scientific and Technical Information (COSATI) Subject Category List" (AD-612 200). Each field is subdivided into groups, as shown on page v.

NTIS has adopted a single price schedule for its printed reports. The new price schedule, effective November 1, 1974, covers reports now in the collection and those yet to be acquired. These are the basic paper copy selling prices. If, however, the cited price in an entry in this journal is greater than the basic paper copy price shown here, the cited price remains in effect. A few reports will continue to be specially priced. The exceptions are publications of Special Technology Groups and organizations for which NTIS acts as a sales agent and must honor that organization's price schedule.

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NTIS Products

About WGA

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Materials Sciences
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Natural Resources
Ocean Technology & Engineering
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Punched Cards—Furnished as 80-column cards.

Subject Field & Group Structure

(Use Edge Index on back cover to locate subject field in the journal)

FIELD 1. AERONAUTICS. Includes the following Groups: Aerodynamics; Aeronautics; Aircraft, Aircraft Flight Control and Instrumentation; Air Facilities.

FIELD 2. AGRICULTURE. Includes the following Groups: Agricultural Chemistry; Agricultural Economics; Agricultural Engineering; Agronomy and Horticulture; Animal Husbandry; Forestry.

FIELD 3. ASTRONOMY AND ASTROPHYSICS. Includes the following Groups: Astronomy; Astrophysics; Celestial Mechanics.

FIELD 4. ATMOSPHERIC SCIENCES. Includes the following Groups: Atmospheric Physics; Meteorology.

FIELD 5. BEHAVIORAL AND SOCIAL SCIENCES. Includes the following Groups: Administration and Management; Documentation and Information Technology; Economics; History, Law, and Political Science; Human Factors Engineering; Humanities; Linguistics; Man-machine Relations; Personnel Selection, Training, and Evaluation; Psychology (Individual and Group Behavior); Sociology.

FIELD 6. BIOLOGICAL AND MEDICAL SCIENCES. Includes the following Groups: Biochemistry; Bioengineering; Biology; Bionics; Clinical Medicine; Environmental Biology; Escape, Rescue, and Survival; Food, Hygiene and Sanitation; Industrial (Occupational) Medicine; Life Support; Medical and Hospital Equipment; Microbiology; Personnel Selection and Maintenance (Medical); Pharmacology, Physiology; Protective Equipment; Radiobiology; Stress Physiology; Toxicology; Weapon Effects.

FIELD 7. CHEMISTRY. Includes the following Groups: Chemical Engineering; Inorganic Chemistry; Organic Chemistry; Physical Chemistry, Radio and Radiation Chemistry.

FIELD 8. EARTH SCIENCES AND OCEANOGRAPHY. Includes the following Groups: Biological Oceanography; Cartography; Dynamic Oceanography; Geochemistry; Geodesy; Geography; Geology and Mineralogy; Hydrology and Limnology; Mining Engineering; Physical Oceanography; Seismology; Snow, Ice, and Permafrost; Soil Mechanics; Terrestrial Magnetism.

FIELD 9. ELECTRONICS AND ELECTRICAL ENGINEERING. Includes the following Groups: Components; Computers; Electronic and Electrical Engineering; Information Theory; Subsystems; and Telemetry.

FIELD 10. ENERGY CONVERSION (Non-propulsive). Includes the following Groups: Conversion Techniques; Power Sources; Energy Storage.

FIELD 11. MATERIALS. Includes the following Groups: Adhesives and Seals; Ceramics, Refractories, and Glasses; Coatings, Colorants, and Finishes; Composite Materials; Fibers and Textiles; Metallurgy and Metallography; Miscellaneous Materials; Oils, Lubricants, and Hydraulic Fluids; Plastics; Rubbers; Solvents, Cleaners, and Abrasives; Wood and Paper Products.

FIELD 12. MATHEMATICAL SCIENCES. Includes the following Groups: Mathematics and Statistics; Operations Research.

FIELD 13. MECHANICAL, INDUSTRIAL, CIVIL, AND MARINE ENGINEERING. Includes the following Groups: Air Conditioning, Heating, Lighting, and Ventilating; Civil Engineering; Construction Equipment, Materials, and Supplies; Containers and Packaging; Couplings; Fittings, Fasteners, and Joints; Ground Transportation Equipment; Hydraulic and Pneumatic Equipment; Industrial Processes; Machinery and Tools; Marine Engineering; Pumps, Filters, Pipes, Fittings, Tubing, and Valves; Safety Engineering; Structural Engineering.

FIELD 14. METHODS AND EQUIPMENT. Includes the following Groups: Cost Effectiveness; Laboratories, Test Facilities, and Test Equipment; Recording Devices; Reliability; Reprography.

FIELD 15. MILITARY SCIENCES. Includes the following Groups: Antisubmarine Warfare; Chemical, Biological, and Radiological Warfare; Defense; Intelligence; Logistics; Nuclear Warfare; Operations, Strategy, and Tactics.

FIELD 16. MISSILE TECHNOLOGY. Includes the following Groups: Missile Launching and Ground Support; Missile Trajectories; Missile Warheads and Fuses; Missiles.

FIELD 17. NAVIGATION, COMMUNICATIONS, DETECTION, AND COUNTERMEASURES. Includes the following Groups: Acoustic Detection, Communications, Direction Finding; Electromagnetic and Acoustic Countermeasures; Infrared and Ultraviolet Detection; Magnetic Detection; Navigation and Guidance; Optical Detection; Radar Detection; Seismic Detection.

FIELD 18. NUCLEAR SCIENCE AND TECHNOLOGY. Includes the following Groups: Fusion Devices (Thermonuclear); Isotopes; Nuclear Explosions; Nuclear Instrumentation; Nuclear Power Plants; Radiation Shielding and Protection; Radioactive Wastes and Fission Products; Radioactivity; Reactor Engineering and Operation; Reactor Materials; Reactor Physics; Reactors (Power); Reactors (Nonpower); SNAP Technology.

FIELD 19. ORDNANCE. Includes the following Groups: Ammunition, Explosives, and Pyrotechnics; Bombs; Combat Vehicles; Explosions, Ballistics, and Armor; Fire Control and Bombing Systems; Guns; Rockets; Underwater Ordnance.

FIELD 20. PHYSICS. Includes the following Groups: Acoustics; Crystallography; Electricity and Magnetism; Fluid Mechanics; Masers and Lasers; Optics; Particle Accelerators; Particle Physics; Plasma Physics; Quantum Theory; Solid Mechanics; Solid-state Physics; Thermodynamics; Wave Propagation.

FIELD 21. PROPULSION AND FUELS. Includes the following Groups: Air-breathing Engines; Combustion and Ignition; Electric Propulsion; Fuels; Jet and Gas Turbine Engines; Nuclear Propulsion; Reciprocating Engines; Rocket Motors and Engines; Rocket Propellants.

FIELD 22. SPACE TECHNOLOGY. Includes the following Groups: Astronautics; Spacecraft; Spacecraft Trajectories and Reentry; Spacecraft Launch Vehicles and Ground Support.

Sample Entries

Report entries are arranged by COSATI group and field. Within fields they are arranged alphanumerically by Accession (Order) Number - alphabetic data precedes numeric.

AD/A-003 266/4GA PC$6.25/MF$2.25
Kansas Univ/Center for Research Inc Lawrence Remote Sensing Lab
PROJECT THEMIS: A CENTER FOR REMOTE SENSING.
Final rept. 16 Sep 67-15 Sep 73,
F.T. Ulaby, and R.K. Moore, Jun 74, 172p Rept no. CRES-TR-133-29 ETL-CR-74-10
Contract DAAK02-68-C-0089
See also AD-743 234.

Descriptors: *Radar mapping, *Target discrimination, Aerial reconnaissance, Data processing equipment, Preprocessing, Microwaves, Ultrasonic radiation, Image Intensification, Backscattering, Agriculture, Vegetation, Land use, Soils, Scattering, Spectrometry.
Identifiers: Themis project, *Remote sensing.

This report summarizes the technical work accomplished under Project THEMIS, A Center for Remote Sensing at the University of Kansas during the period 16 September 1967 through 15 September 1973. The highlights of the four major areas forming the remote sensing system are presented. A detailed description of the latest radar spectrometer results is presented.

Index entries are arranged alphanumerically. Titles are included in all indexes except Contract Number Index. Sample entries for each index follow:

Subject: Entries are sequenced by major subject term, second paired term, and accession number.

RADAR MAPPING
Project THEMIS: A Center for Remote Sensing.
AD/A-003 266/4GI

Personal Author: Entries are sequenced by personal author, report title, and accession number.

MOORE, R. K.
Project THEMIS: A Center for Remote Sensing.
AD/A-003 266/4GI

Corporate Author: Entries are sequenced by corporate author name, report number, and accession number. The monitor agency number is given following the report title.

KANSAS UNIV/CENTER FOR RESEARCH INC LAWRENCE REMOTE SENSING LAB
CRES-TR-133-29
Project THEMIS: A Center for Remote Sensing.
(ETL-CR-74-10)
AD/A-003 266/4GI

Contract Grant Number: Entries are sequenced by contract or grant number, corporate author, and accession number.

DAAK02-68-C-0089
Kansas Univ/Center for Research Inc Lawrence Remote Sensing Lab
AD/A-003 266/4GI

Accession/Report Number: Entries are sequenced by accession, report, or monitor agency number. Prices are given in this index.

AD/A-003 266/4GI
Project THEMIS: A Center for Remote Sensing.
AD/A-003 266/4GI 8F PC$6.25/MF$2.25

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A complete list of currently available Published Searches ($25 domestic; $35 foreign each for the first copy of any title, $10 domestic; $12.50 foreign for each additional copy of the *same* title, ordered at the *same* time, and sent to the *same* address) is printed in this listing, starting on page viii.

HOW TO READ THE CITATIONS

The list of Published Searches following this introductory page includes all those available as of July 1975. Titles are arranged in 35 subject categories and are cross-referenced to all appropriate categories.

The citations in this listing include the following information:

+ Order Number (Please use when ordering any information item).
+ Title
+ Number of technical report summaries (in parentheses) in the search.
+ Date of preparation of the search.

All Published Searches are available in paper copy or microfiche (105 x 148.75mm, which is about 4 x 6 inches) with up to 98 pages per fiche (24X). Published Searches are $25 each for domestic addresses ($35 for addresses outside the U.S.) whether in paper copy or fiche. Additional copies of the *same* Published Search to the *same* address cost $10 each for domestic addresses ($12.50 each for addresses outside the U.S.) in paper copy or fiche. Prices subject to change.

PUBLISHED SEARCHES

Administration

PERT (110) May 74
COM-74-10918

Technology Transfer (144) 1972-Jul 74
COM-74-11194

Urban Information Systems (196) 1970-Aug 74 Includes USAC reports
COM-74-11319

Productivity (126) Oct 74
COM-74-11571

Management Games (163) Nov 74
NTIS/PS-74/112

Inventory Control (195) 1970-Dec 74
NTIS/PS-74/121

Job Satisfaction (216) Dec 74
NTIS/PS-74/122

Production Planning and Scheduling (143) Dec 74
NTIS/PS-74/124

Time Series Forecasting and Prediction (96) Jan 75
NTIS/PS-75/150

Career Development. Part 1. Military Careers (143) Feb 75
NTIS/PS-75/276

Career Development. Part 2. Civilian Careers (186) Feb 75
NTIS/PS-75/277

Construction Management (103) Apr 75
NTIS/PS-75/352

Replacement Theory (85) Apr 75
NTIS/PS-75/405

Linear Programming in Management (38) May 75
NTIS/PS-75/406

Aeronautics and Aerodynamics

Air Traffic Control Simulation Models (125) May 74
COM-74-10919

Airport Noise (113) Nov 74
NTIS/PS-74/098

Collision Avoidance Systems (156) Dec 74
NTIS/PS-75/036

Holographic Flow Visualization (53) Jan 75
NTIS/PS-75/115

Flow Visualization (106) Jan 75 Excludes shadowgraph, schlieren, and holographic techniques
NTIS/PS-75/116

Aircraft Wake Vortices (137) Dec 1974
NTIS/PS-75/164

Aircraft Sonic Boom. Part 1. Studies on Aircraft Flight and Design (99) Feb 75
NTIS/PS-75/318

Aircraft Sonic Boom. Part 2. Effects on Buildings (60) Feb 75
NTIS/PS-75/319

Aircraft Sonic Boom. Part 3. Biological Effects (52) Feb 75
NTIS/PS-75/320

Surface Effect Vehicles/Ships in Marine Environments (108) Jan 75
NTIS/PS-75/332

Surface Effect Vehicles and Surface Effect: General Studies. Vol. 1. 1964-1971 (134) Jan 75 Does not include marine environments
NTIS/PS-75/333

Surface Effect Vehicles and Surface Effect: General Studies. Vol. 2. 1972-1974 (67) Jan 75 Does not include marine environments
NTIS/PS-75/334

Flight Simulator Training (119) Feb 75
NTIS/PS-75/336

Agriculture and Food

Sewage and Organic Waste Irrigation (79) Jul 74
COM-74-11192

Animal Waste Pollution and Its Control (115) Jul 74
COM-74-11203

Food Processing Waste Treatment (167) Nov 74
NTIS/PS-74/083

Food Processing (207) Dec 74
NTIS/PS-74/119

Food Taste (137) Oct 74
NTIS/PS-75/057

Agricultural Resources Surveys (53) 1973-Jan 75
NTIS/PS-75/068

Ground Water Pollution. Part 2. Pollution From Irrigation and Fertilization (132) Jan 75
NTIS/PS-75/072

Fish Protein Concentrates (117) Jan 75
NTIS/PS-75/093

Air Pollution Effects on Plants (135) Jan 75
NTIS/PS-75/101

Fishery Law (126) Jan 75
NTIS/PS-75/111

Aquaculture. Part 1. Fish (212) Feb 75 Excludes studies on salmon
NTIS/PS-75/304

Aquaculture. Part 2. Shellfish (129) Feb 75
NTIS/PS-75/305

Aquaculture. Part 3. Salmon (63) Feb 75
NTIS/PS-75/306

GRAS(Generally Recognized as Safe) Food Ingredients (253) April 75
NTIS/PS-75/356

Medical Entomology. Vol. 2. 1970-1975 (192) 1970-Jan 1975
NTIS/PS-75/360

Medical Entomology. Vol.1.1964-1969 (157) 1964-1969
NTIS/PS-75/361

Food Packaging and Storage (187) 1970-Apr 75
NTIS/PS-75/380

Astronomy and Astrophysics

Mars Environment (93) 1971-Oct 74
NTIS/PS-75/031

Cosmic Rays (129) 1973-Jan 75
NTIS/PS-75/134

Quasars, Pulsars, Black Holes (170) Feb 75
NTIS/PS-75/225

Solar Eclipses (140) Feb 75
NTIS/PS-75/229

Cosmology (102) Feb 75
NTIS/PS-75/242

Atmospheric Sciences

Clear Air Turbulence (220) Dec 74
NTIS/PS-75/008

Atmospheric Echo Sounding (50) Dec 74
NTIS/PS-75/045

Weather Modification Effects and Management (117) Jan 75 Excludes theory and physics of cloud seeding and nucleation
NTIS/PS-75/078

Fog Dispersal (167) Jan 74
NTIS/PS-75/099

Hurricane Forecasting, Modification, and Research (174) Jan 75
NTIS/PS-75/187

The Chemistry and Physics of Ozone in the Stratosphere (91) Jan 75
NTIS/PS-75/228

Solar Eclipses (140) Feb 75
NTIS/PS-75/229

Ice and Fog: Detection and Warning Systems (58) Dec 74
NTIS/PS-75/231

Automobile Air Pollution. Part 6. Atmospheric Motion (42) 1970-Dec 74
NTIS/PS-75/314

Cloud Seeding (231) Apr 75 Includes effects on water resources
NTIS/PS-75/395

Behavior and Society

Juvenile Delinquency Prevention Programs (100) Dec 73
COM-74-10100

Blindness (80) Dec 73
COM-74-10832

Vocational Rehabilitation of the Physically Handicapped (78) May 74
COM-74-10928

Computer Aided Instruction (252) 1970-Aug 74
COM-74-11376

The Elderly (139) Sep 74
COM-74-11393

Productivity (126) Oct 74
COM-74-11571

Alcoholism (135) Nov 74
NTIS/PS-74/110

Job Satisfaction (216) Dec 74
NTIS/PS-74/122

Quality of Life in the Urban Environment (131) 1970-Dec 74
NTIS/PS-74/125

Ocean Law (123) Dec 74
NTIS/PS-74/134

Civil Insurgency (84) Jan 75
NTIS/PS-75/002

Rehabilitation of Criminal and Public Offenders (100) 1967-Oct 74
NTIS/PS-75/005

Disasters (131) Dec 74
NTIS/PS-75/007

Medicare and Medicaid Programs (64) Dec 74
NTIS/PS-75/012

Computational Linguistics (108) Jan 75
NTIS/PS-75/032

Family Counseling (35) Jan 75
NTIS/PS-75/034

Crime Prevention and Enforcement Through Community Relations (72) Jan 75
NTIS/PS-75/047

Psycholinguistics (60) Jan 75
NTIS/PS-75/052

Speech Intelligibility (170) Jan 75
NTIS/PS-75/053

Behavior and Psychology as Related to Law Enforcement (103) Jan 75
NTIS/PS-75/056

Health Manpower (86) Jan 75 Excludes allied health personnel
NTIS/PS-75/058

Audiovisual Education (69) Dec 74
NTIS/PS-75/062

Signs and Display Systems: Graphic Design and Human Engineering (92) Jan 75
NTIS/PS-75/073

American Indians (122) Jan 75
NTIS/PS-75/079

Industrial Psychology (161) Jan 75
NTIS/PS-75/082

The Use of the Mass Media by Local and Regional Governments (58) Jan 75
NTIS/PS-75/083

Information Processing in Humans (221) Jan 75
NTIS/PS-75/087

Behavior and Physiological Effects of Noise. Vol 1. 1964-1972 (200) Jan 75
NTIS/PS-75/102

Behavior and Physiological Effects of Noise. Vol 2. 1973-1974 (72) Jan 75
NTIS/PS-75/103

Rehabilitation of the Physically Handicapped (119) Jan 75 Excludes reports sponsored solely by the Atomic Energy Commission
NTIS/PS-75/131

Rehabilitation of the Mentally Retarded (79) Jan 75
NTIS/PS-75/132

Driver Education (109) Jan 75
NTIS/PS-75/144

Probation and Parole (55) Jan 75
NTIS/PS-75/145

Drug Abuse (113) Jan 75
NTIS/PS-75/147

Effects of Fatigue on Human Behavior and Performance (104) Jan 75
NTIS/PS-75/161

Ghettos (69) Jan 75
NTIS/PS-75/168

Individualized Instruction (72) Jan 75
NTIS/PS-75/195

Attitudes, Opinions, and Motivations among Adolescents (186) Feb 75
NTIS/PS-75/232

Migrant Workers (38) Jan 75
NTIS/PS-75/240

Forensic Medicine (39) Jan 75
NTIS/PS-75/245

Historical Background Studies of the National Park Service (168) Jan 75
NTIS/PS-75/253

Student Teacher Interaction (69) Feb 75
NTIS/PS-75/261

Social Change (147) Feb 75
NTIS/PS-75/266

Career Development. Part 1. Military Careers (143) Feb 75
NTIS/PS-75/276

Career Development. Part 2. Civilian Careers (186) Feb 75
NTIS/PS-75/277

Human Aggression (41) Feb 75
NTIS/PS-75/281

Labor Relations (169) Feb 75 Excludes job satisfaction, bargaining, and productivity
NTIS/PS-75/290

Collective Bargaining, Wages, and Labor Contracts (55) Feb 75
NTIS/PS-75/291

Human Memory (130) Feb 75
NTIS/PS-75/297

Work Attitudes in the Military (98) Feb 75
NTIS/PS-75/298

Work Attitudes in the Civilian Sector (178) Feb 75
NTIS/PS-75/300

Population Mobility (127) Feb 75
NTIS/PS-75/323

Simulators in Education and Training (99) Feb 75
NTIS/PS-75/335

Flight Simulator Training (119) Feb 75
NTIS/PS-75/336

Adult Education (98) Feb 75
NTIS/PS-75/358

Public Opinion and Sociology of Water Resource Development (82) 1970-Apr 75
NTIS/PS-75/373

Arms Control (234) Apr 75
NTIS/PS-75/393

Biomedical Technology and Engineering

Blindness (80) Dec 73
COM-74-10832

Artificial Limbs (107) 1968-Apr 74
COM-74-10855

Facial and Dental Prosthetics (63) Apr 74
COM-74-10888

Biocompatible Materials (160) Jul 74
COM-74-11126

Computer Technology in Medicine (166) 1972-Jul 74
COM-74-11312

Health Services in Rural Areas (59) Aug 1974
COM-74-11528

Blood Preservation and Storage (203) Nov 74
NTIS/PS-75/010

Medicare and Medicaid Programs (64) Dec 74
NTIS/PS-75/012

Underwater Breathing Apparatus (130) Dec 74
NTIS/PS-75/039

Health Manpower (86) Jan 75 Excludes allied health personnel
NTIS/PS-75/058

Robots (89) Jan 75
NTIS/PS-75/064

Biotelemetry (139) Nov 74
NTIS/PS-75/094

Color Vision (143) Jan 75
NTIS/PS-75/138

Emergency Medical Services and Care (87) Jan 75
NTIS/PS-75/171

Night Vision and Dark Adaptation (78) Jan 75
NTIS/PS-75/172

Radiology (102) 1967-Jan 75
NTIS/PS-75/173

Ultrasonics in Medicine (39) Jan 75
NTIS/PS-75/175

Nuclear Medicine (218) Jan 75
NTIS/PS-75/213

Ambulatory Health Care (74) Feb 75
NTIS/PS-75/341

Electromagnetic Shielding. Vol 1. 1964-1971 (162) Apr 75
NTIS/PS-75/366

Electromagnetic Shielding. Vol 2. 1972-1975 (78) Apr 75
NTIS/PS-75/367

Bionics (53) May 75
NTIS/PS-75/396

Artificial Intelligence (80) May 75
NTIS/PS-75/397

Artificial Kidneys (182) 1968-Apr 75
NTIS/PS-75/418

Mechanical Hearts. Vol. 1. 1969-1973. (173) 1969-1973
NTIS/PS-75/423

Mechanical Hearts. Vol. 2. 1974-1975. (77) 1974-1975
NTIS/PS-75/424

Building Technology

Stress Analysis of Cracks (129) Jan 74
COM-73-10242

Structural Mechanics Software (126) 1971-Apr 74
COM-74-10833

Industrialized Housing (159) Jun 74
COM-74-10982

Earthquake Engineering: Buildings, Bridges, Dams, and Related Structures (190) 1964-May 74
COM-74-11141

Building Fires (143) Sep 74
COM-74-11534

Concrete Polymer Composites (72) Cct 74
COM-74-11535

Wood Bonding (96) Jan 75
NTIS/PS-75/051

Fire Alarms and Fire Detectors (96) Jan 75
NTIS/PS-75/133

Prestressed Concrete Technology (161) Dec 74
NTIS/PS-75/211

Fiberboard and Particleboard (75) Jan 75
NTIS/PS-75/221

Structural Foundations in Soils, Ice, Snow, and Permafrost. Vol. 1. 1964-1971 (135) Jan 75 Excludes subway and seabed construction
NTIS/PS-75/282

Structural Foundations in Soils, Ice, Snow, and Permafrost. Vol. 2. 1972-1974 (57) Jan 75 Excludes subway and seabed construction
NTIS/PS-75/283

Aircraft Sonic Boom. Part 2. Effects on Buildings (60) Feb 75
NTIS/PS-75/319

Solar Heating and Air Conditioning (71) Jan 75
NTIS/PS-75/345

Construction Management (103) Apr 75
NTIS/PS-75/352

Architectural Construction Materials. Part 1. Non Concrete (189) May 75 Excludes concretes, bridges, pavements, airfields, cold weather construction, composites, and earthqua ke resistant construction
NTIS/PS-75/389

Architectural Construction Materials. Part 2. Concrete and Cement (127) May 75 Excludes nonconcretes, bridges, pavements, airfields, cold weather construction, composites, and eart hquake resistant construction
NTIS/PS-75/390

Construction Equipment (174) May 75 Excludes translations
NTIS/PS-75/391

Cold Weather Construction (99) May 75 Excludes permafrost construction
NTIS/PS-75/394

Business and Economics

Productivity (126) Oct 74
COM-74-11571

Material Shortages (96) Nov 74
NTIS/PS-74/085

Air Pollution Economics (202) 1970-Nov 74
NTIS/PS-74/091

Solid Waste Disposal Economics (76) Nov 74
NTIS/PS-74/092

Noise Pollution Economics (23) Nov 74
NTIS/PS-74/093

Water Pollution Economics (199) Nov 74 Excludes sewage treatment
NTIS/PS-74/094

Effects of Inflation (48) Dec 74
NTIS/PS-74/130

Ocean Law (123) Dec 74
NTIS/PS-74/134

Revenue Sharing (30) Jan 75
NTIS/PS-75/097

Federal Individual Income Tax Return Data by ZIP Code (104) Jan 75
NTIS/PS-75/098

Minority Business (71) Jan 75 Excludes regional and socioeconomic studies
NTIS/PS-75/119

Economic Development of Ethnic Minorities (86) Jan 75
NTIS/PS-75/120

Urban Financing and Taxation (95) Jan 75 Excludes financing of transportation and pollution control
NTIS/PS-75/199

Financing Urban Transportation. Part 1. General Studies (65) 1970-Jan 75
NTIS/PS-75/200

Financing Urban Transportation. Part 2. Local Studies (95) 1970-Jan 75
NTIS/PS-75/201

Financing and Taxation For Urban Control of Pollution (111) Jan 75
NTIS/PS-75/202

Housing Taxation and Financing by the Federal, State, and Local Governments (87) Jan 75
NTIS/PS-75/203

Labor Relations (169) Feb 75 Excludes job satisfaction, bargaining, and productivity
NTIS/PS-75/290

Collective Bargaining, Wages, and Labor Contracts (55) Feb 75
NTIS/PS-75/291

Federal Trade Commission Advertising Substantiation Program (148) Feb 75
NTIS/PS-75/299

Telecommunications--Economic Studies (66) May 75
NTIS/PS-75/400

Economic Models. Vol. 1. 1964-March 1974 (161) May 75
NTIS/PS-75/407

Economic Models. Vol. 2. May 75 (140)
NTIS/PS-75/408

Consumer Products and Consumer Affairs (41) May 75
NTIS/PS-75/409

Chemistry

Sulfur Dioxide Control (150) Nov 73
COM-73-11804

Chemical Analysis of Aerosols and Airborne Particulates (60) Jun 74 Excludes sampling and particle size analysis
COM-74-11018

Activated Carbon (190) Sep 74
COM-74-11529

Drag Reducing Fluids (134) 1969-Nov 74
NTIS/PS-74/109

Fire Resistant Fibers and Textiles (124) Dec 74
NTIS/PS-74/111

Liquid Crystals (182) Nov 74
NTIS/PS-74/116

Polycarboranes (63) Nov 74
NTIS/PS-74/117

Waste Processing and Pollution in the Chemical and Petrochemical Industries (172) Dec 74
NTIS/PS-74/118

Fly Ash (143) Dec 74
NTIS/PS-74/133

Sewage Treatment by Reverse Osmosis and Membrane Processes (39) Dec 74
NTIS/PS-75/017

Standard Reference Materials (118) Jan 75
NTIS/PS-75/041

Lubricating Oil Analysis for Wear Monitoring (46) Jan 74
NTIS/PS-75/048

Combustion of Plastics and Elastomers (67) Jan 75
NTIS/PS-75/084

Electrodialysis Desalination (100) Dec 74
NTIS/PS-75/135

Water Pollution Detection (166) 1970-Jan 75
NTIS/PS-75/156

Corrosion in Desalination Plants (154) Dec 74
NTIS/PS-75/157

Laser Spectroscopy (126) 1970-Jan 75 Excludes Raman spectroscopy
NTIS/PS-75/159

Laser Raman Spectroscopy (66) 1970-Jan 74
NTIS/PS-75/160

Gas Scrubbers (156) Dec 74
NTIS/PS-75/163

Osmotic Desalting Membranes. Vol 2. 1973-1974 (89) Jan 75
NTIS/PS-75/193

Osmotic Desalting Membranes. Vol 1. 1964-1972 (120) Jan 75
NTIS/PS-75/194

Acrylic Resins. Part 1. Acrylonitrile Polymers (75) Dec 74
NTIS/PS-75/206

Acrylic Resins. Part 2. Methacrylate Polymers (146) Dec 74
NTIS/PS-75/207

Acrylic Resins. Part 3. Acrylates, Acrylamides, and General Studies (125) Dec 74
NTIS/PS-75/208

Mercury Pollution (113) Dec 74 Excludes toxicity and pollution effects
NTIS/PS-75/209

The Chemistry and Physics of Ozone in the Stratosphere (91) Jan 75
NTIS/PS-75/228

Fluidized Bed Combustion (66) Dec 74
NTIS/PS-75/256

The Chemistry of Silicone Resins (130) Jan 75
NTIS/PS-75/257

Lead Pollution (171) Jan 75 Excludes pollution effects and toxicology of lead
NTIS/PS-75/267

Hazardous Material Waste Disposal (92) Dec 74 Excludes radioactive wastes
NTIS/PS-75/285

Hazardous Materials Transportation (126) Dec 74 Excludes radioactive wastes
NTIS/PS-75/286

Chemical Analysis of Steels (110) Feb 75
NTIS/PS-75/289

Automobile Air Pollution. Part 2. Exhaust Analysis (33) 1970-Dec 74
NTIS/PS-75/310

Polytetrafluoroethylene (Teflon) (118) Apr 75
NTIS/PS-75/353

Polywater (34) Apr 75
NTIS/PS-75/359

Desulfurization of Coal and Petroleum (107) Apr 75 Excludes flue gas and other post-combustion sulfur control
NTIS/PS-75/381

Coal Gasification and Liquefacton Vol 1. 1964-1973 (161) 1964-1973
NTIS/PS-75/385

Coal Gasification and Liquefaction. Vol 2. 1974 (90) 1974-Apr 75
NTIS/PS-75/386

Light Detection and Ranging(LIDAR) (191) May 75
NTIS/PS-75/402

Civil and Structural Engineering

Stress Analysis of Cracks (129) Jan 74
COM-73-10242

Erosion Control Methodology (68) Oct 73
COM-73-11803

Marine Fouling (125) 1969-May 74
COM-74-10889

Earthquake Engineering: Buildings, Bridges, Dams, and Related Structures (190) 1964-May 74
COM-74-11141

Flood Control (191) 1972-Jul 74
COM-74-11201

Concrete Polymer Composites (72) Cct 74
COM-74-11535

Tunnel Construction (138) Nov 74
NTIS/PS-74/096

Environmental and Ecological Effects of Dredging (85) Jan 75
NTIS/PS-75/050

De-icing Materials and Techniques for Roads and Runways (92) Jan 75
NTIS/PS-75/061

Bridges: Construction and Construction Materials (104) Dec 74
NTIS/PS-75/076

Highway Beautification (46) Jan 75
NTIS/PS-75/180

Permafrost. Part 2. Structural Engineering (174) Jan 75
NTIS/PS-75/198

Prestressed Concrete Technology (161) Dec 74
NTIS/PS-75/211

Foundations in Marine Environments (64) Dec 74
NTIS/PS-75/255

Structural Foundations in Soils, Ice, Snow, and Permafrost. Vol. 1. 1964-1971 (135) Jan 75 Excludes subway and seabed construction
NTIS/PS-75/282

Structural Foundations in Soils, Ice, Snow, and Permafrost. Vol. 2. 1972-1974 (57) Jan 75 Excludes subway and seabed construction
NTIS/PS-75/283

Construction Management (103) Apr 75
NTIS/PS-75/352

Soil Compaction/Consolidation (181) Apr 75
NTIS/PS-75/365

Electromagnetic Shielding. Vol 1. 1964-1971 (162) Apr 75
NTIS/PS-75/366

Electromagnetic Shielding. Vol 2. 1972-1975 (78) Apr 75
NTIS/PS-75/367

Architectural Construction Materials. Part 1. Non Concrete (189) May 75 Excludes concretes, bridges, pavements, airfields, cold weather construction, composites, and earthqua ke resistant construction
NTIS/PS-75/389

Architectural Construction Materials. Part 2. Concrete and Cement (127) May 75 Excludes nonconcretes, bridges, pavements, airfields, cold weather construction, composites, and eart hquake resistant construction
NTIS/PS-75/390

Construction Equipment (174) May 75 Excludes translations
NTIS/PS-75/391

Cold Weather Construction (99) May 75 Excludes permafrost construction
NTIS/PS-75/394

Communication

Speech Recognition by Computer (142) Sep 74
COM-74-11435

Computer Networks (153) 1969-Oct 74
COM-74-11572

Telephone Systems (181) Dec 74
NTIS/PS-74/087

Applications of the Fast Fourier Transform (144) 1970-Nov 74
NTIS/PS-74/101

Vocoders (87) Jan 75
NTIS/PS-75/030

Electroluminescent Display Devices (105) Jan 75
NTIS/PS-75/035

Underwater Voice Communication Systems (78) Dec 74
NTIS/PS-75/037

Psycholinguistics (60) Jan 75
NTIS/PS-75/052

Speech Intelligibility (170) Jan 75
NTIS/PS-75/053

Data Compression (89) Jan 75
NTIS/PS-75/067

Signs and Display Systems: Graphic Design and Human Engineering (92) Jan 75
NTIS/PS-75/073

The Use of the Mass Media by Local and Regional Governments (58) Jan 75
NTIS/PS-75/083

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NTIS/PS-75/142

Frequency Allocation and Management (100) Jan 75
NTIS/PS-75/178

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NTIS/PS-75/188

Acoustic Surface Waves. Vol. 1. 1964-1972 (75) Jan 75
NTIS/PS-75/248

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NTIS/PS-75/249

Microwave Communication (163) Jan 75.
NTIS/PS-75/250

Antenna Arrays. Vol 2. 1972-1974 (93) Feb 75 Excludes phased arrays
NTIS/PS-75/302

Antenna Arrays. Vol 1. 1964-1971 (219) Feb 75 Excludes phased arrays
NTIS/PS-75/303

Phased Arrays. Vol 1. 1964-1971 (141) Feb 75
NTIS/PS-75/337

Phased Arrays. Vol 2. 1972-1974 (103) Feb 75
NTIS/PS-75/338

Electromagnetic Shielding. Vol 1. 1964-1971 (162) Apr 75
NTIS/PS-75/366

Electromagnetic Shielding. Vol 2. 1972-1975 (78) Apr 75
NTIS/PS-75/367

Walsh Functions (55) Apr 75
NTIS/PS-75/378

Information and Communication Theory (124) May 75
NTIS/PS-75/398

Telecommunications--Economic Studies (66) May 75
NTIS/PS-75/400

Cable Television (75) Apr 75
NTIS/PS-75/404

Light Communication Systems (151) Apr 75
NTIS/PS-75/412

Fiber Optics (147) 1969-May 75
NTIS/PS-75/420

Computers, Control and Information Theory

Automated Text Editing (57) Dec 73
COM-74-10124

Computer Information Security and Protection (121) Jun 74
COM-74-11017

Computer Technology in Medicine (166) 1972-Jul 74
COM-74-11312

Control Theory (203) 1970-Jul 74
COM-74-11433

Speech Recognition by Computer (142) Sep 74
COM-74-11435

The Use of Computers in Solving Mathematical Problems (172) Jun 71-Sep 74
COM-74-11454

Computer Networks (153) 1969-Oct 74
COM-74-11572

Pattern Recognition (97) Nov 74
NTIS/PS-74/084

Computer Storage Management (118) Nov 74
NTIS/PS-74/095

Applications of the Fast Fourier Transform (144) 1970-Nov 74
NTIS/PS-74/101

Minicomputers (215) Nov 74
NTIS/PS-74/102

Automata Theory (132) December 74
NTIS/PS-75/026

Logic Design (116) Dec 74
NTIS/PS-75/029

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NTIS/PS-75/035

Computer Performance Evaluation (40) Jan 75
NTIS/PS-75/063

Robots (89) Jan 75
NTIS/PS-75/064

Network Flows (126) Jan 75
NTIS/PS-75/065

Data Compression (89) Jan 75
NTIS/PS-75/067

Magnetic Bubble Domains (42) Jan 75
NTIS/PS-75/086

Symbolic Programming (41) Jan 75
NTIS/PS-75/121

Switching Circuits (111) 1970-Dec 74
NTIS/PS-75/128

Interactive Computer Graphics (126) 1970-Jan 75
NTIS/PS-75/158

Microcomputers (59) Feb 75
NTIS/PS-75/251

Semiconductor Computer Storage (89) Jan 75
NTIS/PS-75/274

Computer Software Maintenance (45) Apr 75
NTIS/PS-75/355

Walsh Functions (55) Apr 75
NTIS/PS-75/378

Artificial Intelligence (80) May 75
NTIS/PS-75/397

Information and Communication Theory (124) May 75
NTIS/PS-75/398

Machine Translation (127) May 75 Covers several foreign languages
NTIS/PS-75/411

Computer Software Standards (53) May 75
NTIS/PS-75/416

Detection and Countermeasures

Night Vision Devices (95) Jan 75
NTIS/PS-75/055

Infrared Upconversion (48) Dec 74
NTIS/PS-75/075

Remote Sensing for Natural Resource, Environmental, and Regional Planning (91) 1973-Jan 75
NTIS/PS-75/104

Instrumentation and Data Processing Used in the Earth Resources Technology Satellite (80) 1973-Dec 74
NTIS/PS-75/105

Electronic Countermeasures and Electronic Counter Countermeasures (91) Jan 75
NTIS/PS-75/165

Ice and Fog: Detection and Warning Systems (58) Dec 74
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Antenna Arrays. Vol 2. 1972-1974 (93) Feb 75 Excludes phased arrays
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Seismic Detection. Part 1. General Studies (82) Jan 75 Excludes detection of nuclear events.
NTIS/PS-75/326

Seismic Detection. Part 2. Nuclear Events--1970-1972--Vol. 1. (135) Jan 75
NTIS/PS-75/327

Seismic Detection. Part 2. Nuclear Events--1973-1974--Vol. 2. (124) Jan 75
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Phased Arrays. Vol 2. 1972-1974 (103) Feb 75
NTIS/PS-75/338

Nonlinear Acoustics (71) Apr 75
NTIS/PS-75/351

Electromagnetic Shielding. Vol 1. 1964-1971 (162) Apr 75
NTIS/PS-75/366

Electromagnetic Shielding. Vol 2. 1972-1975 (78) Apr 75
NTIS/PS-75/367

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NTIS/PS-75/402

Electrotechnology

Electroluminescent Display Devices (105) Jan 75
NTIS/PS-75/035

Night Vision Devices (95) Jan 75
NTIS/PS-75/055

Switching Circuits (111) 1970-Dec 74
NTIS/PS-75/128

IMPATT Diodes (81) Jan 75
NTIS/PS-75/149

Phase Shifters (119) Jan 75
NTIS/PS-75/154

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NTIS/PS-75/177

Band Pass Filters (104) Jan 75
NTIS/PS-75/188

Electron Beam Semiconductor Devices (38) Jan 75
NTIS/PS-75/190

Gunn Effect Devices (140) Jan 75
NTIS/PS-75/227

Printed Circuits. Vol 1. 1964-1971 (109) Jan 75
NTIS/PS-75/233

Printed Circuits. Vol 2. 1972-1974 (67) Jan 75
NTIS/PS-75/234

Strip Transmission Lines (111) Jan 75
NTIS/PS-75/239

Beam Lead Microelectronics (36) Jan 75
NTIS/PS-75/246

Integrated Circuit Reliability (173) Jan 75
NTIS/PS-75/247

Acoustic Surface Waves. Vol. 1. 1964-1972 (75) Jan 75
NTIS/PS-75/248

Acoustic Surface Waves. Vol. 2. 1973-1974 (137) Jan 75
NTIS/PS-75/249

Lightning, Surge, and Transient Protection (88) Jan 75
NTIS/PS-75/258

Semiconductor Computer Storage (89) Jan 75
NTIS/PS-75/274

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NTIS/PS-75/275

Transistor Amplifiers (93) Jan 75
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Antenna Arrays. Vol 1. 1964-1971 (219) Feb 75 Excludes phased arrays
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Microwave Oscillators. Vol 2. 1972-1974 (73) Jan 75
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Phased Arrays. Vol 1. 1964-1971 (141) Feb 75
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Electromagnetic Shielding. Vol 1. 1964-1971 (162) Apr 75
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Amorphous Semiconductors (224) Oct 73 -Dec 74
NTIS/PS-75/368

Light Emitting Diodes (159) Apr 75
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Fiber Optics (147) 1969-May 75
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Energy

Magnetohydrodynamic Generators in Power Generation (68) Jul 74
COM-74-11193

Fuel Cells (270) 1969-Sep 74
COM-74-11533

Offshore Drilling (96) 1966-Nov 74 Includes environmental aspects
NTIS/PS-74/103

Nuclear Fusion (146) 1971-Dec 74 Excludes reports sponsered solely by the Atomic Energy Commission
NTIS/PS-74/131

Design and Applications of Flywheels (57) Jan 75
NTIS/PS-75/070

Cadmium Sulfide Solar Cells (161) Jan 75
NTIS/PS-75/089

Optical Coatings for Solar Cells and Solar Collectors (51) Jan 75
NTIS/PS-75/137

Energy Conservation (91) Jan 75
NTIS/PS-75/214

Waste Heat Utilization (116) Jan 75 Includes total energy systems
NTIS/PS-75/215

Oil Recovery (86) Jan 75 Excludes offshore drilling
NTIS/PS-75/254

Heat Pipes. Vol 1. 1964-1972 (175) Feb 75
NTIS/PS-75/316

Heat Pipes. Vol 2. 1973-1974 (122) Feb 75
NTIS/PS-75/317

Fuel Consumption. Part 2. Transportation (93) Feb 75
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Fuel Consumption. Part 1. Industrial, Residential, and General Studies (75) Feb 75
NTIS/PS-75/343

Solar Heating and Air Conditioning (71) Jan 75
NTIS/PS-75/345

Solar Electric Power Generation (94) Jan 75
NTIS/PS-75/346

Solar Collectors and Concentrators (57) Jan 75 Excludes spacecraft application
NTIS/PS-75/347

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NTIS/PS-75/348

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NTIS/PS-75/362

Electric Power Consumption (89) Apr 75
NTIS/PS-75/363

Pollution and Environmental Aspects of Fuel Conversion (47) Apr 75
NTIS/PS-75/371

Thermionics (119) Apr 75
NTIS/PS-75/372

Geothermal Energy (148) Apr 75
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Hydrogen Energy (86) Apr 75
NTIS/PS-75/379

Desulfurization of Coal and Petroleum (107) Apr 75 Excludes flue gas and other post-combustion sulfur control
NTIS/PS-75/381

Coal Gasification and Liquefacton Vol 1. 1964-1973 (161) 1964-1973
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Coal Gasification and Liquefaction. Vol 2. 1974 (90) 1974-Apr 75
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Environmental Pollution and Control

Odor Pollution (92) Aug 73
COM-73-11463

Sulfur Dioxide Control (150) Nov 73
COM-73-11804

Salt Marshes (34) Dec 73
COM-74-10312

Water Quality Modeling (158) May 74
COM-74-10938

Oil Spill Removal (114) May 74
COM-74-10951

Highway Traffic Noise (73) Jun 74
COM-74-10971

Chemical Analysis of Aerosols and Airborne Particulates (60) Jun 74 Excludes sampling and particle size analysis
COM-74-11018

Sewage Effects in Marine and Estuarine Environments (112) Jun 74
COM-74-11057

Metal Waste Reclamation (146) Jul 74
COM-74-11140

Sewage and Organic Waste Irrigation (79) Jul 74
COM-74-11192

Animal Waste Pollution and Its Control (115) Jul 74
COM-74-11203

Ocean Waste Disposal (131) Aug 74
COM-74-11265

Air Quality Monitoring (121) 1970-Jul 74
COM-74-11360

Activated Carbon (190) Sep 74
COM-74-11529

Food Processing Waste Treatment (167) Nov 74
NTIS/PS-74/083

Supertankers and Superports (60) Nov 74 Includes environmental considerations
NTIS/PS-74/088

Nitrogen Oxide Air Pollution Studies (152) Nov 74
NTIS/PS-74/089

Eutrophication (254) Nov 74
NTIS/PS-74/090

Air Pollution Economics (202) 1970-Nov 74
NTIS/PS-74/091

Solid Waste Disposal Economics (76) Nov 74
NTIS/PS-74/092

Noise Pollution Economics (23) Nov 74
NTIS/PS-74/093

Water Pollution Economics (199) Nov 74 Excludes sewage treatment
NTIS/PS-74/094

Activated Sludge Treatment (235) Nov 74
NTIS/PS-74/097

Airport Noise (113) Nov 74
NTIS/PS-74/098

Water Rights and Water Law (147) Nov 74
NTIS/PS-74/099

Water Pollution in Estuaries and Coastal Zones (153) Nov 74 Excludes specific biological and oceanographic studies
NTIS/PS-74/100

Offshore Drilling (96) 1966-Nov 74 Includes environmental aspects
NTIS/PS-74/103

Urban Air Pollution (153) 1970-Nov 74
NTIS/PS-74/104

Urban Noise Pollution (66) 1970-Nov 74
NTIS/PS-74/106

Urban Sewage Treatment Planning (134) 1970-Nov 74
NTIS/PS-74/107

Urban Storm Sewers and Water Runoff (229) Nov 74
NTIS/PS-74/108

Air Pollution Effects on Materials (57) Dec 74
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Waste Processing and Pollution in the Chemical and Petrochemical Industries (172) Dec 74
NTIS/PS-74/118

Quality of Life in the Urban Environment (131) 1970-Dec 74
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Automatic Acquisition of Water Quality Data (116) 1970-Dec 74
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NTIS/PS-74/133

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DDT, DDD, and DDE Pesticides (150) Dec 74
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Toxic Effects of Pesticides (143) Dec 74
NTIS/PS-75/009

Sewage Treatment by Reverse Osmosis and Membrane Processes (39) Dec 74
NTIS/PS-75/017

Asbestos and Silicate Pollution (91) Dec 74 Includes silicosis and asbestosis
NTIS/PS-75/019

Cadmium Pollution (101) Dec 74
NTIS/PS-75/020

Beryllium Pollution (53) Dec 74
NTIS/PS-75/021

Industrial Hazards Due to Atmospheric Factors (181) 1970-Sept 74
NTIS/PS-75/022

Bioindicators of Pollution (119) Nov 74
NTIS/PS-75/024

Acid Mine Drainage (137) Jan 75
NTIS/PS-75/046

Environmental and Ecological Effects of Dredging (85) Jan 75
NTIS/PS-75/050

Strip Mining (101) Jan 75
NTIS/PS-75/054

Maneuvering Aircraft: Noise Pollution and Control (102) Jan 75
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Pollution and Its Control In the Paper and Pulp Industry (145) Jan 75
NTIS/PS-75/069

Ground Water Pollution. Part 2. Pollution From Irrigation and Fertilization (132) Jan 75
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Textile Processing Wastes (59) Jan 75
NTIS/PS-75/080

Ecosystem Models (144) Jan 74
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Air Pollution Effects on Plants (135) Jan 75
NTIS/PS-75/101

Behavior and Physiological Effects of Noise. Vol 1. 1964-1972 (200) Jan 75
NTIS/PS-75/102

Behavior and Physiological Effects of Noise. Vol 2. 1973-1974 (72) Jan 75
NTIS/PS-75/103

Remote Sensing for Natural Resource, Environmental, and Regional Planning (91) 1973-Jan 75
NTIS/PS-75/104

Ecology of Insecticide Water Pollution. Vol 1. 1974 (62) Jan 75
NTIS/PS-75/107

Ecology of Insecticide Water Pollution. Vol 2. 1964-1973 (203) Jan 75
NTIS/PS-75/108

Coal Mine Waste (51) Dec 74
NTIS/PS-75/112

The Biological Effects of Oil Spills (107) Jan 75 Excludes biodeterioration
NTIS/PS-75/118

Bacterial Pollution of Water (147) Jan 75
NTIS/PS-75/129

Diesel Engine Exhaust (86) Jan 75
NTIS/PS-75/139

Biodeterioration of Oil Spills (81) Jan 74
NTIS/PS-75/152

Water Pollution Detection (166) 1970-Jan 75
NTIS/PS-75/156

Gas Scrubbers (156) Dec 74
NTIS/PS-75/163

Regional and Urban Solid Waste Disposal. Part 1. Management Planning (81) Jan 75
NTIS/PS-75/184

Regional and Urban Solid Waste Disposal. Part 2. Local Case Studies (110) Jan 75
NTIS/PS-75/185

Regional and Urban Solid Waste Disposal. Part 3. Handling and Disposal Technology (84) Jan 75
NTIS/PS-75/186

Financing and Taxation For Urban Control of Pollution (111) Jan 75
NTIS/PS-75/202

Mercury Pollution (113) Dec 74 Excludes toxicity and pollution effects
NTIS/PS-75/209

Biological Effects of Mercury Pollution (112) Dec 74
NTIS/PS-75/210

Waste Heat Utilization (116) Jan 75 Includes total energy systems
NTIS/PS-75/215

Thermal Pollution. Part 1. Control Techniques and General Studies (85) Jan 75 Excludes waste heat recovery
NTIS/PS-75/218

Thermal Pollution. Part 2. Biological Effects (171) Jan 75
NTIS/PS-75/219

Thermal Pollution. Part 3. Hydrology and Hydrodynamics (124) Jan 75
NTIS/PS-75/220

The Chemistry and Physics of Ozone in the Stratosphere (91) Jan 75
NTIS/PS-75/228

Sewage Sludge Disposal (146) Dec 74
NTIS/PS-75/252

Fluidized Bed Combustion (66) Dec 74
NTIS/PS-75/256

Lead Pollution (171) Jan 75 Excludes pollution effects and toxicology of lead
NTIS/PS-75/267

Biological Effects of Lead Pollution (109) Jan 75
NTIS/PS-75/268

Hazardous Material Waste Disposal (92) Dec 74 Excludes radioactive wastes
NTIS/PS-75/285

Hazardous Materials Transportation (126) Dec 74 Excludes radioactive wastes
NTIS/PS-75/286

Automobile Air Pollution. Part 1. Abatement Through Management and Planning (89) 1970-Jan 75
NTIS/PS-75/309

Automobile Air Pollution. Part 2. Exhaust Analysis (33) 1970-Dec 74
NTIS/PS-75/310

Automobile Air Pollution. Part 3. Control Equipment (100) 1970-Dec 74
NTIS/PS-75/311

Automobile Air Pollution. Part 4. New Automotive Engines (60) 1970-Dec 74
NTIS/PS-75/312

Automobile Air Pollution. Part 5. Automotive Fuels (48) 1970-Dec 74
NTIS/PS-75/313

Automobile Air Pollution. Part 6. Atmospheric Motion (42) 1970-Dec 74
NTIS/PS-75/314

Aircraft Sonic Boom. Part 1. Studies on Aircraft Flight and Design (99) Feb 75
NTIS/PS-75/318

Aircraft Sonic Boom. Part 2. Effects on Buildings (60) Feb 75
NTIS/PS-75/319

Aircraft Sonic Boom. Part 3. Biological Effects (52) Feb 75
NTIS/PS-75/320

Ground Water Pollution. Part 3. Saline Ground Water (76) Apr 75
NTIS/PS-75/354

Aeration of Sewage Lagoons, Reservoirs, and Streams (157) Apr 75
NTIS/PS-75/357

Oil Shale (137) Apr 75
NTIS/PS-75/362

Pollution and Environmental Aspects of Fuel Conversion (47) Apr 75
NTIS/PS-75/371

Biochemical Oxygen Demand (262) Mar 75
NTIS/PS-75/375

Desulfurization of Coal and Petroleum (107) Apr 75 Excludes flue gas and other post-combustion sulfur control
NTIS/PS-75/381

Metal Processing Wastes. Part 2. Water Pollution (112) Apr 75
NTIS/PS-75/382

Metal Processing Wastes. Part 1. Air Pollution (167) Apr 75
NTIS/PS-75/383

Septic Tank Design and Use (73) Apr 75 Includes reports dealing with non-septic tank, household sewage treatment systems
NTIS/PS-75/388

Effects of Land Use and Urbanization on Water Resources (94) 1971-May 75
NTIS/PS-75/401

Air Pollution Emission Factors (69) May 75
NTIS/PS-75/410

Industrial and Mechanical Engineering

Applications of Holography (123) 1970-Nov 73
COM-73-11958

Mine Safety (158) 1972-Jul 74
COM-74-11223

Production Planning and Scheduling (143) Dec 74
NTIS/PS-74/124

Industrial Hazards Due to Atmospheric Factors (181) 1970-Sept 74
NTIS/PS-75/022

Standard Reference Materials (118) Jan 75
NTIS/PS-75/041

Lubricating Oil Analysis for Wear Monitoring (46) Jan 74
NTIS/PS-75/048

Design and Applications of Flywheels (57) Jan 75
NTIS/PS-75/070

Industrial Psychology (161) Jan 75
NTIS/PS-75/082

Metrication in the United States (72) Dec 74
NTIS/PS-75/123

Fire Alarms and Fire Detectors (96) Jan 75
NTIS/PS-75/133

Plasma and Flame Spraying (129) Jan 75
NTIS/PS-75/155

Metal Drawing (43) Jan 75
NTIS/PS-75/162

High Energy Rate Forming. Part 1 (68) Jan 75 Excludes explosive forming
NTIS/PS-75/186

High Energy Rate Forming. Part 2. Explosive Forming (104) Jan 75
NTIS/PS-75/187

Fluid Control Devices. Vol 1. 1964-1971 (188) Dec 74
NTIS/PS-75/204

Fluid Control Devices. Vol 2. 1972-1974 (104) Dec 74
NTIS/PS-75/205

Ferrous Metal Casting (173) Dec 74
NTIS/PS-75/223

Electron Beam Welding (131) Jan 75
NTIS/PS-75/226

Gas Bearings (124) 1970-Jan 75
NTIS/PS-75/243

Use of Ultrasonics in Manufacturing Procedures (89) Dec 74
NTIS/PS-75/244

Nondestructive Ultrasonic Testing and Inspection. Vol. 1, 1964-1971 (188) Jan 75
NTIS/PS-75/270

Nondestructive Ultrasonic Testing and Inspection. Vol. 2. 1972-1974 (165) Jan 75
NTIS/PS-75/271

Shipborne Containers and Containerization (100) Jan 75
NTIS/PS-75/284

Heat Pipes. Vol 1. 1964-1972 (175) Feb 75
NTIS/PS-75/316

Heat Pipes. Vol 2. 1973-1974 (122) Feb 75
NTIS/PS-75/317

Electrodeposition. Vol 1. 1964-1971 (97) Jan 75
NTIS/PS-75/330

Electrodeposition. Vol 2. 1972-1974 (110) Jan 75
NTIS/PS-75/331

Fuel Consumption. Part 1. Industrial, Residential, and General Studies (75) Feb 75
NTIS/PS-75/343

Library and Information Sciences

Automated Text Editing (57) Dec 73
COM-74-10124

Biomedical Information Systems (123) Jan 75
NTIS/PS-75/085

Copyrights (56) Jan 75
NTIS/PS-75/146

User Needs in Documentation and Information (60) Jan 75
NTIS/PS-75/189

Records Management (170) Feb 75
NTIS/PS-75/269

Machine Translation (127) May 75 Covers several foreign languages
NTIS/PS-75/411

Materials Sciences

Marine Fouling (125) 1969-May 74
COM-74-10889

Metal Waste Reclamation (146) Jul 74
COM-74-11140

Carbon and Graphite Materials. Part 1. Carbon Fibers and Carbon Fiber Composites (278) Sep 74
COM-74-11526

Carbon and Graphite Materials. Part 2. Carbon and Graphite Composites (149) Sep 74 Excludes carbon fibers
COM-74-11527

Activated Carbon (190) Sep 74
COM-74-11529

Drag Reducing Fluids (134) 1969-Nov 74
NTIS/PS-74/109

Fire Resistant Fibers and Textiles (124) Dec 74
NTIS/PS-74/111

Air Pollution Effects on Materials (57) Dec 74
NTIS/PS-74/113

Fly Ash (143) Dec 74
NTIS/PS-74/133

Adhesives (123) 1970-Jan 75
NTIS/PS-75/040

Standard Reference Materials (118) Jan 75
NTIS/PS-75/041

Lubricating Oil Analysis for Wear Monitoring (46) Jan 74
NTIS/PS-75/048

Hydrogen Embrittlement of Metals (185) Jan 75
NTIS/PS-75/049

Wood Bonding (96) Jan 75
NTIS/PS-75/051

Combustion of Plastics and Elastomers (67) Jan 75
NTIS/PS-75/084

Reinforced Plastics. Part 1. Fiberglass Reinforcement (151) Jan 75
NTIS/PS-75/109

Reinforced Plastics. Part 2. Boron, Carbon, and Other Reinforcing Materials (152) Jan 75
NTIS/PS-75/110

Solid Lubricants (109) Jan 75
NTIS/PS-75/113

Highway Markings (64) Dec 74
NTIS/PS-75/122

Gas Turbines, General: Corrosion and Erosion (141) Dec 74 Excludes turbine blades
NTIS/PS-75/126

Turbine Blades: Corrosion and Erosion (78) Dec 74
NTIS/PS-75/127

Lightweight Armor (106) Jan 75
NTIS/PS-75/136

Optical Coatings for Solar Cells and Solar Collectors (51) Jan 75
NTIS/PS-75/137

Seals and Gaskets (180) 1970-Jan 75
NTIS/PS-75/140

Sea Water Corrosion (165) Dec 74
NTIS/PS-75/143

Plasma and Flame Spraying (129) Jan 75
NTIS/PS-75/155

Corrosion in Desalination Plants (154) Dec 74
NTIS/PS-75/157

Superalloys (172) Dec 74
NTIS/PS-75/179

Carbon and Graphite Materials. Part 3. Graphite Research (148) Jan 75
NTIS/PS-75/181

Carbon and Graphite Materials. Part 4. Carbon Research (67) Jan 75
NTIS/PS-75/182

Carbon and Graphite Materials. Part 5. Glassy Carbon (35) Dec 74
NTIS/PS-75/183

Cryogenic Properties of Aluminum and Aluminum Alloys (70) Jan 75
NTIS/PS-75/192

Acrylic Resins. Part 1. Acrylonitrile Polymers (75) Dec 74
NTIS/PS-75/206

Acrylic Resins. Part 2. Methacrylate Polymers (146) Dec 74
NTIS/PS-75/207

Acrylic Resins. Part 3. Acrylates, Acrylamides, and General Studies (125) Dec 74
NTIS/PS-75/208

Ablation and Ablative Materials (121) Jan 75
NTIS/PS-75/212

Fracture of Ceramics (147) Dec 74
NTIS/PS-75/217

Fiberboard and Particleboard (75) Jan 75
NTIS/PS-75/221

Ferrous Metal Casting (173) Dec 74
NTIS/PS-75/223

Electron Beam Welding (131) Jan 75
NTIS/PS-75/226

Cathodic Protection (135) Dec 74
NTIS/PS-75/241

The Chemistry of Silicone Resins (130) Jan 75
NTIS/PS-75/257

Chemical Analysis of Steels (110) Feb 75
NTIS/PS-75/289

Cavitation. Part 3. Corrosion and Erosion (83) Feb 75 Excludes turbine cavitation
NTIS/PS-75/294

Cavitation. Part 4. Cavitation Flow and Erosion in Turbines (60) Feb 75
NTIS/PS-75/295

Electrodeposition. Vol 1. 1964-1971 (97) Jan 75
NTIS/PS-75/330

Electrodeposition. Vol 2. 1972-1974 (110) Jan 75
NTIS/PS-75/331

Polytetrafluoroethylene (Teflon) (118) Apr 75
NTIS/PS-75/353

Detergents, Soaps, and Surface Active Cleaners (105) Apr 75
NTIS/PS-75/370

Boron Reinforced Composites (199) 1972-May 75
NTIS/PS-75/414

Metal Matrix Composites (180) 1971-May 75
NTIS/PS-75/422

Mathematical Sciences

The Use of Computers in Solving Mathematical Problems (172) Jun 71-Sep 74
COM-74-11454

Numerical Methods in Fluid Flow Problems (139) Sep 74
COM-74-11499

Integration of Partial Differential Equations (121) 1970-Nov 74
NTIS/PS-75/027

Integration of Nonlinear Differential Equations (78) 1970-Nov 74
NTIS/PS-75/028

Network Flows (126) Jan 75
NTIS/PS-75/065

Experimental Design (100) Jan 75
NTIS/PS-75/066

Time Series Forecasting and Prediction (96) Jan 75
NTIS/PS-75/150

Linear Programming in Management (38) May 75
NTIS/PS-75/406

Medicine and Biology

Antineoplastic Agents (136) 1970-Jan 74
COM-74-10105

Blindness (80) Dec 73
COM-74-10832

Vocational Rehabilitation of the Physically Handicapped (78) May 74
COM-74-10928

Sewage Effects in Marine and Estuarine Environments (112) Jun 74
COM-74-11057

Computer Technology in Medicine (166) 1972-Jul 74
COM-74-11312

Carcinogens (134) Sep 74
NTIS/PS-74/086

Sickle Cell Anemia (35) Nov 74
NTIS/PS-74/114

Hepatitis and Blood Transfusions (48) Nov 74
NTIS/PS-74/115

Immunologic Diseases (199) Dec 74
NTIS/PS-74/126

Transplantation Immunology (94) 1970-Dec 74
NTIS/PS-74/127

Vaccines and Immunity (169) 1970-Dec 74
NTIS/PS-74/128

DDT, DDD, and DDE Pesticides (150) Dec 74
NTIS/PS-74/135

Toxic Effects of Pesticides (143) Dec 74
NTIS/PS-75/009

Biological Effects of Laser Radiation (169) Jan 75
NTIS/PS-75/011

Medicare and Medicaid Programs (64) Dec 74
NTIS/PS-75/012

Molecular Biology (91) 1968-Oct 74
NTIS/PS-75/013

Asbestos and Silicate Pollution (91) Dec 74 Includes silicosis and asbestosis
NTIS/PS-75/019

Industrial Hazards Due to Atmospheric Factors (181) 1970-Sept 74
NTIS/PS-75/022

Epilepsy (59) Nov 74
NTIS/PS-75/023

Bioindicators of Pollution (119) Nov 74
NTIS/PS-75/024

Biofeedback (35) Jan 75
NTIS/PS-75/025

Stress Factors on Pilot Performance (65) Nov 74
NTIS/PS-75/033

The Use of Dogs to Detect Explosives and Narcotics (24) Jan 75
NTIS/PS-75/043

Biomedical Information Systems (123) Jan 75
NTIS/PS-75/085

Information Processing in Humans (221) Jan 75
NTIS/PS-75/087

Ecosystem Models (144) Jan 74
NTIS/PS-75/088

Congenital Abnormalities (50) Jan 75
NTIS/PS-75/090

Biological Pest Control (77) 1966-Jan 75
NTIS/PS-75/091

Endangered Species (29) Dec 74
NTIS/PS-75/092

Fish Protein Concentrates (117) Jan 75
NTIS/PS-75/093

Venereal Diseases (46) Oct 74
NTIS/PS-75/095

Contraceptives and Birth Control (49) Nov 74
NTIS/PS-75/096

Interferon (157) Jan 75
NTIS/PS-75/100

Air Pollution Effects on Plants (135) Jan 75
NTIS/PS-75/101

Behavior and Physiological Effects of Noise. Vol 1. 1964-1972 (200) Jan 75
NTIS/PS-75/102

Behavior and Physiological Effects of Noise. Vol 2. 1973-1974 (72) Jan 75
NTIS/PS-75/103

Auditory Perception in Cetacea (57) Jan 75
NTIS/PS-75/106

Ecology of Insecticide Water Pollution. Vol 1. 1974 (62) Jan 75
NTIS/PS-75/107

Ecology of Insecticide Water Pollution. Vol 2. 1964-1973 (203) Jan 75
NTIS/PS-75/108

The Biological Effects of Oil Spills (107) Jan 75 Excludes biodeterioration
NTIS/PS-75/118

Herpes Virus (103) Jan 75
NTIS/PS-75/124

Cigarette Smoking (39) Jan 75
NTIS/PS-75/125

Bacterial Pollution of Water (147) Jan 75
NTIS/PS-75/129

Rehabilitation of the Physically Handicapped (119) Jan 75 Excludes reports sponsored solely by the Atomic Energy Commission
NTIS/PS-75/131

Rehabilitation of the Mentally Retarded (79) Jan 75
NTIS/PS-75/132

Color Vision (143) Jan 75
NTIS/PS-75/138

Drug Abuse (113) Jan 75
NTIS/PS-75/147

Biodeterioration of Oil Spills (81) Jan 74
NTIS/PS-75/152

Effects of Fatigue on Human Behavior and Performance (104) Jan 75
NTIS/PS-75/161

Whales (93) Jan 75
NTIS/PS-75/169

Cold Weather Stress on Humans (72) Jan 75
NTIS/PS-75/170

Emergency Medical Services and Care (87) Jan 75
NTIS/PS-75/171

Night Vision and Dark Adaptation (78) Jan 75
NTIS/PS-75/172

Radiology (102) 1967-Jan 75
NTIS/PS-75/173

Ultrasonics in Medicine (39) Jan 75
NTIS/PS-75/175

Prostaglandins (37) 1967-Jan 75
NTIS/PS-75/176

Biological Effects of Mercury Pollution (112) Dec 74
NTIS/PS-75/210

Nuclear Medicine (218) Jan 75
NTIS/PS-75/213

Thermal Pollution. Part 2. Biological Effects (171) Jan 75
NTIS/PS-75/219

Tumor Immunology (51) 1964-Sept 73
NTIS/PS-75/222

Psychoses (85) Jan 75
NTIS/PS-75/235

Hyperbaric Oxygenation (125) Jan 75
NTIS/PS-75/236

Altitude Hypoxia (166) Jan 75
NTIS/PS-75/237

Forensic Medicine (39) Jan 75
NTIS/PS-75/245

Nystagmus (196) Jan 75
NTIS/PS-75/259

Hemophilia (22) Jan 75
NTIS/PS-75/260

Radioimmunoassay Studies (55) Jan 75
NTIS/PS-75/262

Tumor Viruses (65) Jan 75
NTIS/PS-75/263

Cardiovascular Diseases. Vol. 2. 1973-1974 (106) 1973-Oct 74
NTIS/PS-75/264

Cardiovascular Diseases. Vol. 1. 1964-1972 (151) 1964-1972
NTIS/PS-75/265

Biological Effects of Lead Pollution (109) Jan 75
NTIS/PS-75/268

Hypertension (80) Jan 75
NTIS/PS-75/272

Chronic Obstructive Lung Disease (24) Jan 75
NTIS/PS-75/273

Underwater Medicine and Physiology (191) Jan 75
NTIS/PS-75/278

Burn Therapy (126) Jan 75
NTIS/PS-75/280

Malaria. Vol 1. 1964-1970 (174) Feb 75
NTIS/PS-75/307

Malaria. Vol 2. 1971-1974 (64) Feb 75
NTIS/PS-75/308

Oral Diseases and Preventive Dentistry (119) Feb 75
NTIS/PS-75/315

Aircraft Sonic Boom. Part 3. Biological Effects (52) Feb 75
NTIS/PS-75/320

Ecology of the Marine Environment (205) Feb 75
NTIS/PS-75/329

Leukemia (134) Feb 75
NTIS/PS-75/339

Dental Materials and Equipment (143) Feb 75
NTIS/PS-75/340

Schistosoma and Schistosomiasis (130) Feb 75
NTIS/PS-75/344

Septicemia (158) Feb 75
NTIS/PS-75/349

GRAS(Generally Recognized as Safe) Food Ingredients (253) April 75
NTIS/PS-75/356

Medical Entomology. Vol. 2. 1970-1975 (192) 1970-Jan 1975
NTIS/PS-75/360

Medical Entomology. Vol.1.1964-1969 (157) 1964-1969
NTIS/PS-75/361

Hemorrhagic Shock (70) 1964 - Apr 75
NTIS/PS-75/369

Biological Effects of Microwaves (112) Mar 75
NTIS/PS-75/384

Toxicity of Gaseous Halocarbons (70) May 1975
NTIS/PS-75/387

Artificial Kidneys (182) 1968-Apr 75
NTIS/PS-75/418

Military Sciences

Inventory Control (195) 1970-Dec 74
NTIS/PS-74/121

Guerrilla Warfare (125) Jan 74
NTIS/PS-75/001

Civil Insurgency (84) Jan 75
NTIS/PS-75/002

Riots and Riot Control (110) Jan 75
NTIS/PS-75/003

Insurgency and Counterinsurgency in Military Affairs (128) Jan 75
NTIS/PS-75/004

Night Vision Devices (95) Jan 75
NTIS/PS-75/055

Arms Control (234) Apr 75
NTIS/PS-75/393

Replacement Theory (85) Apr 75
NTIS/PS-75/405

Natural Resources

Structural Geologic Studies (88) Jul 73
COM-73-11802

Salt Marshes (34) Dec 73
COM-74-10312

Forest management (85) 1967-Feb 74
COM-74-10406

Water Quality Modeling (158) May 74
COM-74-10938

Sport Fishing (124) Jul 74
COM-74-11202

Mine Safety (158) 1972-Jul 74
COM-74-11223

Eutrophication (254) Nov 74
NTIS/PS-74/090

Water Rights and Water Law (147) Nov 74
NTIS/PS-74/099

Offshore Drilling (96) 1966-Nov 74 Includes environmental aspects
NTIS/PS-74/103

Automatic Acquisition of Water Quality Data (116) 1970-Dec 74
NTIS/PS-74/129

Ocean Law (123) Dec 74
NTIS/PS-74/134

Snow Studies (192) Jan 75
NTIS/PS-75/042

Acid Mine Drainage (137) Jan 75
NTIS/PS-75/046

Environmental and Ecological Effects of Dredging (85) Jan 75
NTIS/PS-75/050

Strip Mining (101) Jan 75
NTIS/PS-75/054

Seismology (62) 1974-Oct 74 Excludes detection
NTIS/PS-75/059

Agricultural Resources Surveys (53) 1973-Jan 75
NTIS/PS-75/068

Ground Water Pollution. Part 2. Pollution From Irrigation and Fertilization (132) Jan 75
NTIS/PS-75/072

Weather Modification Effects and Management (117) Jan 75 Excludes theory and physics of cloud seeding and nucleation
NTIS/PS-75/078

Endangered Species (29) Dec 74
NTIS/PS-75/092

Remote Sensing for Natural Resource, Environmental, and Regional Planning (91) 1973-Jan 75
NTIS/PS-75/104

Instrumentation and Data Processing Used in the Earth Resources Technology Satellite (80) 1973-Dec 74
NTIS/PS-75/105

Coal Mine Waste (51) Dec 74
NTIS/PS-75/112

Tectonics (157) Jan 75
NTIS/PS-75/191

Mine Ventilation (66) Jan 75
NTIS/PS-75/196

Permafrost. Part 1. General Studies (105) Jan 75
NTIS/PS-75/197

Permafrost. Part 2. Structural Engineering (174) Jan 75
NTIS/PS-75/198

Thermal Pollution. Part 3. Hydrology and Hydrodynamics (124) Jan 75
NTIS/PS-75/220

Oil Recovery (86) Jan 75 Excludes offshore drilling
NTIS/PS-75/254

Seismic Detection. Part 1. General Studies (82) Jan 75 Excludes detection of nuclear events.
NTIS/PS-75/326

Ground Water Pollution. Part 3. Saline Ground Water (76) Apr 75
NTIS/PS-75/354

Aeration of Sewage Lagoons, Reservoirs, and Streams (157) Apr 75
NTIS/PS-75/357

Oil Shale (137) Apr 75
NTIS/PS-75/362

Public Opinion and Sociology of Water Resource Development (82) 1970-Apr 75
NTIS/PS-75/373

Planning and Impact of Water Resource Programs (210) 1972-Apr 75
NTIS/PS-75/374

Biochemical Oxygen Demand (262) Mar 75
NTIS/PS-75/375

Geothermal Energy (148) Apr 75
NTIS/PS-75/377

Underwater Construction and Mining (127) May 75
NTIS/PS-75/392

Effects of Land Use and Urbanization on Water Resources (94) 1971-May 75
NTIS/PS-75/401

Navigation, Guidance and Control

Omega Navigation System (129) Jan 75
NTIS/PS-75/151

Non-Destructive Testing

Applications of Holography (123) 1970-Nov 73
COM-73-11958

Motor Vehicle Tires: Skid and Wear Resistance; Nondestructive Tests; Safety (130) Aug 74
COM-74-11372

Holographic Flow Visualization (53) Jan 75
NTIS/PS-75/115

Schlieren and Shadowgraph Photography (149) Jan 75
NTIS/PS-75/117

Nondestructive Ultrasonic Testing and Inspection. Vol. 1. 1964-1971 (188) Jan 75
NTIS/PS-75/270

Nondestructive Ultrasonic Testing and Inspection. Vol. 2. 1972-1974 (165) Jan 75
NTIS/PS-75/271

Nuclear Science and Technology

Nuclear Fusion (146) 1971-Dec 74 Excludes reports sponsered solely by the Atomic Energy Commission
NTIS/PS-74/131

Rehabilitation of the Physically Handicapped (119) Jan 75 Excludes reports sponsored solely by the Atomic Energy Commission
NTIS/PS-75/131

Carbon and Graphite Materials. Part 3. Graphite Research (148) Jan 75
NTIS/PS-75/181

Nuclear Medicine (218) Jan 75
NTIS/PS-75/213

Seismic Detection. Part 2. Nuclear Events--1970-1972--Vol. 1. (135) Jan 75
NTIS/PS-75/327

Seismic Detection. Part 2. Nuclear Events--1973-1974--Vol. 2. (124) Jan 75
NTIS/PS-75/328

Ocean Technology and Engineering

Remote Sensing of the Ocean Surface (101) 1970-Sep 73
COM-73-11676

Marine Fouling (125) 1969-May 74
COM-74-10889

Oil Spill Removal (114) May 74
COM-74-10951

Sewage Effects in Marine and Estuarine Environments (112) Jun 74
COM-74-11057

Ocean Waste Disposal (131) Aug 74
COM-74-11265

Supertankers and Superports (60) Nov 74 Includes environmental considerations
NTIS/PS-74/088

Water Pollution in Estuaries and Coastal Zones (153) Nov 74 Excludes specific biological and oceanographic studies
NTIS/PS-74/100

Offshore Sructures (66) Dec 74 Excludes offshore drilling platforms
NTIS/PS-74/123

Ocean Law (123) Dec 74
NTIS/PS-74/134

Marine Anchors (97) Dec 74
NTIS/PS-75/014

Underwater Voice Communication Systems (78) Dec 74
NTIS/PS-75/037

Underwater Clothing, Tools, and Equipment (101) Dec 74 Excludes breathing apparatus
NTIS/PS-75/038

Underwater Breathing Apparatus (130) Dec 74
NTIS/PS-75/039

Seismology (62) 1974-Oct 74 Excludes detection
NTIS/PS-75/059

Icebreakers and Icebreaking (88) Dec 74
NTIS/PS-75/077

The Biological Effects of Oil Spills (107) Jan 75 Excludes biodeterioration
NTIS/PS-75/118

Recreational Boating (71) Jan 75
NTIS/PS-75/141

Sea Water Corrosion (165) Dec 74
NTIS/PS-75/143

Biodeterioration of Oil Spills (81) Jan 74
NTIS/PS-75/152

Whales (93) Jan 75
NTIS/PS-75/169

Tectonics (157) Jan 75
NTIS/PS-75/191

Foundations in Marine Environments (64) Dec 74
NTIS/PS-75/255

Underwater Medicine and Physiology (191) Jan 75
NTIS/PS-75/278

Shipborne Containers and Containerization (100) Jan 75
NTIS/PS-75/284

Cavitation. Part 2. Hydrofoils (90) Feb 75
NTIS/PS-75/293

Cavitation. Part 5. Propeller Cavitation (74) Feb 75
NTIS/PS-75/296

Aquaculture. Part 1. Fish (212) Feb 75 Excludes studies on salmon
NTIS/PS-75/304

Aquaculture. Part 2. Shellfish (129) Feb 75
NTIS/PS-75/305

Ecology of the Marine Environment (205) Feb 75
NTIS/PS-75/329

Surface Effect Vehicles/Ships in Marine Environments (108) Jan 75
NTIS/PS-75/332

Underwater Construction and Mining (127) May 75
NTIS/PS-75/392

Ocean Wave Sensors (129) May 75
NTIS/PS-75/413

Ordnance

The Use of Dogs to Detect Explosives and Narcotics (24) Jan 75
NTIS/PS-75/043

Lightweight Armor (106) Jan 75
NTIS/PS-75/136

Photography and Recording Devices

Holography (90) Apr 74 Excludes acoustic holography and applications
COM-74-10870

Acoustic holography (64) Apr 74
COM-74-10871

Holographic Flow Visualization (53) Jan 75
NTIS/PS-75/115

Flow Visualization (106) Jan 75 Excludes shadowgraph, schlieren, and holographic techniques
NTIS/PS-75/116

Schlieren and Shadowgraph Photography (149) Jan 75
NTIS/PS-75/117

Physics

Stress Analysis of Cracks (129) Jan 74
COM-73-10242

Applications of Holography (123) 1970-Nov 73
COM-73-11958

Structural Mechanics Software (126) 1971-Apr 74
COM-74-10833

Holography (90) Apr 74 Excludes acoustic holography and applications
COM-74-10870

Acoustic holography (64) Apr 74
COM-74-10871

Carbon Dioxide Lasers (170) Jun 74
COM-74-11056

Numerical Methods in Fluid Flow Problems (139) Sep 74
COM-74-11499

Drag Reducing Fluids (134) 1969-Nov 74
NTIS/PS-74/109

Liquid Crystals (182) Nov 74
NTIS/PS-74/116

Dye Lasers (140) Dec 74
NTIS/PS-74/120

Nuclear Fusion (146) 1971-Dec 74 Excludes reports sponsered solely by the Atomic Energy Commission
NTIS/PS-74/131

Metal Vapor Lasers (35) Dec 74
NTIS/PS-75/015

Carbon Monoxide Lasers (83) Dec 74
NTIS/PS-75/016

Gas Dynamic Lasers (85) Dec 74
NTIS/PS-75/018

Electroluminescent Display Devices (105) Jan 75
NTIS/PS-75/035

Gallium Arsenide Lasers (77) Jan 74
NTIS/PS-75/044

Infrared Upconversion (48) Dec 74
NTIS/PS-75/075

Ultraviolet and X Ray Lasers (80) Jan 75
NTIS/PS-75/081

Magnetic Bubble Domains (42) Jan 75
NTIS/PS-75/086

Cadmium Sulfide Solar Cells (161) Jan 75
NTIS/PS-75/089

Holographic Flow Visualization (53) Jan 75
NTIS/PS-75/115

Flow Visualization (106) Jan 75 Excludes shadowgraph, schlieren, and holographic techniques
NTIS/PS-75/116

Schlieren and Shadowgraph Photography (149) Jan 75
NTIS/PS-75/117

Cavity Flow (117) Jan 75
NTIS/PS-75/153

Aircraft Wake Vortices (137) Dec 1974
NTIS/PS-75/164

Schottky Barrier Devices (114) Jan 75
NTIS/PS-75/177

Frequency Allocation and Management (100) Jan 75
NTIS/PS-75/178

Band Pass Filters (104) Jan 75
NTIS/PS-75/188

Fluid Control Devices. Vol 1. 1964-1971 (188) Dec 74
NTIS/PS-75/204

Fluid Control Devices. Vol 2. 1972-1974 (104) Dec 74
NTIS/PS-75/205

Quasars, Pulsars, Black Holes (170) Feb 75
NTIS/PS-75/225

Solar Eclipses (140) Feb 75
NTIS/PS-75/229

Relativity Theory (130) 1970-Dec 74
NTIS/PS-75/230

Quantum Electrodynamics (153) Feb 75
NTIS/PS-75/238

Cosmology (102) Feb 75
NTIS/PS-75/242

Use of Ultrasonics in Manufacturing Procedures (89) Dec 74
NTIS/PS-75/244

Acoustic Surface Waves. Vol. 1. 1964-1972 (75) Jan 75
NTIS/PS-75/248

Acoustic Surface Waves. Vol. 2. 1973-1974 (137) Jan 75
NTIS/PS-75/249

Cavitation. Part 1. Cavitation Flow (142) Feb 75
NTIS/PS-75/292

Cavitation. Part 2. Hydrofoils (90) Feb 75
NTIS/PS-75/293

Cavitation. Part 3. Corrosion and Erosion (83) Feb 75 Excludes turbine cavitation
NTIS/PS-75/294

Cavitation. Part 4. Cavitation Flow and Erosion in Turbines (60) Feb 75
NTIS/PS-75/295

Cavitation. Part 5. Propeller Cavitation (74) Feb 75
NTIS/PS-75/296

Heat Pipes. Vol 1. 1964-1972 (175) Feb 75
NTIS/PS-75/316

Heat Pipes. Vol 2. 1973-1974 (122) Feb 75
NTIS/PS-75/317

Nonlinear Acoustics (71) Apr 75
NTIS/PS-75/351

Amorphous Semiconductors (224) Oct 73 -Dec 74
NTIS/PS-75/368

Radiation Damage of Laser Materials (143) Apr 75
NTIS/PS-75/399

Light Detection and Ranging(LIDAR) (191) May 75
NTIS/PS-75/402

Light Communication Systems (151) Apr 75
NTIS/PS-75/412

Light Emitting Diodes (159) Apr 75
NTIS/PS-75/415

Fiber Optics (147) 1969-May 75
NTIS/PS-75/420

Propulsion and Fuels

Gas Turbines, General: Corrosion and Erosion (141) Dec 74 Excludes turbine blades
NTIS/PS-75/126

Turbine Blades: Corrosion and Erosion (78) Dec 74
NTIS/PS-75/127

Diesel Engine Exhaust (86) Jan 75
NTIS/PS-75/139

Fluidized Bed Combustion (66) Dec 74
NTIS/PS-75/256

Cavitation. Part 4. Cavitation Flow and Erosion in Turbines (60) Feb 75
NTIS/PS-75/295

Automobile Air Pollution. Part 4. New Automotive Engines (60) 1970-Dec 74
NTIS/PS-75/312

Automobile Air Pollution. Part 5. Automotive Fuels (48) 1970-Dec 74
NTIS/PS-75/313

Transportation

Transportation for the Elderly and Physically Handicapped (25) Apr 74
COM-74-10887

Air Traffic Control Simulation Models (125) May 74
COM-74-10919

Highway Traffic Noise (73) Jun 74
COM-74-10971

Motor Vehicle Tires: Skid and Wear Resistance; Nondestructive Tests; Safety (130) Aug 74
COM-74-11372

Electric Automobiles (60) Oct 74
COM-74-11573

Airport Noise (113) Nov 74
NTIS/PS-74/098

Alcoholism (135) Nov 74
NTIS/PS-74/110

Pedestrian Movement and Safety (70) 1968-Oct 74
NTIS/PS-75/006

Clear Air Turbulence (220) Dec 74
NTIS/PS-75/008

Stress Factors on Pilot Performance (65) Nov 74
NTIS/PS-75/033

Collision Avoidance Systems (156) Dec 74
NTIS/PS-75/036

Maneuvering Aircraft: Noise Pollution and Control (102) Jan 75
NTIS/PS-75/060

Signs and Display Systems: Graphic Design and Human Engineering (92) Jan 75
NTIS/PS-75/073

Bicycles (41) Jan 75
NTIS/PS-75/074

Fog Dispersal (167) Jan 74
NTIS/PS-75/099

Tracked Air Cushion Vehicles and Magnetic Levitation (70) Dec 74
NTIS/PS-75/114

Highway Markings (64) Dec 74
NTIS/PS-75/122

Air Bug Restraints (68) Jan 75
NTIS/PS-75/130

Driver Education (109) Jan 75
NTIS/PS-75/144

Tourism and Travel in the United States (85) Jan 75
NTIS/PS-75/148

Omega Navigation System (129) Jan 75
NTIS/PS-75/151

Aircraft Wake Vortices (137) Dec 1974
NTIS/PS-75/164

Discrete Address Beacon System (46) Jan 75
NTIS/PS-75/174

Highway Beautification (46) Jan 75
NTIS/PS-75/180

Financing Urban Transportation. Part 1. General Studies (65) 1970-Jan 75
NTIS/PS-75/200

Financing Urban Transportation. Part 2. Local Studies (95) 1970-Jan 75
NTIS/PS-75/201

Ice and Fog: Detection and Warning Systems (58) Dec 74
NTIS/PS-75/231

Urban Parking (82) Feb 75
NTIS/PS-75/279

Hazardous Materials Transportation (126) Dec 74 Excludes radioactive wastes
NTIS/PS-75/286

Dual Mode Transportation (77) Feb 75
NTIS/PS-75/287

Automobile Air Pollution. Part 1. Abatement Through Management and Planning (89) 1970-Jan 75
NTIS/PS-75/309

Automobile Air Pollution. Part 2. Exhaust Analysis (33) 1970-Dec 74
NTIS/PS-75/310

Automobile Air Pollution. Part 3. Control Equipment (100) 1970-Dec 74
NTIS/PS-75/311

Automobile Air Pollution. Part 4. New Automotive Engines (60) 1970-Dec 74
NTIS/PS-75/312

Automobile Air Pollution. Part 5. Automotive Fuels (48) 1970-Dec 74
NTIS/PS-75/313

Automobile Air Pollution. Part 6. Atmospheric Motion (42) 1970-Dec 74
NTIS/PS-75/314

Aircraft Sonic Boom. Part 1. Studies on Aircraft Flight and Design (99) Feb 75
NTIS/PS-75/318

Aircraft Sonic Boom. Part 2. Effects on Buildings (60) Feb 75
NTIS/PS-75/319

Aircraft Sonic Boom. Part 3. Biological Effects (52) Feb 75
NTIS/PS-75/320

Railroad Management and Planning (139) Feb 75
NTIS/PS-75/321

Railroad Freight Transportation (98) Feb 75
NTIS/PS-75/322

Surface Effect Vehicles and Surface Effect: General Studies. Vol. 1. 1964-1971 (134) Jan 75 Does not include marine environments
NTIS/PS-75/333

Surface Effect Vehicles and Surface Effect: General Studies. Vol. 2. 1972-1974 (67) Jan 75 Does not include marine environments
NTIS/PS-75/334

Fuel Consumption. Part 2. Transportation (93) Feb 75
NTIS/PS-75/342

Air Traffic Congestion and Capacity (106) Apr 75
NTIS/PS-75/376

Urban Automated Traffic Control (114) May 75
NTIS/PS-75/403

Microwave Landing Systems (80) Apr 75
NTIS/PS-75/417

BART and METRO--Rapid Transit for the San Francisco and Washington D.C. Areas (168) May 75
NTIS/PS-75/421

Urban Technology

Juvenile Delinquency Prevention Programs (100) Dec 73
COM-74-10100

Transportation for the Elderly and Physically Handicapped (25) Apr 74
COM-74-10887

Police (132) May 74
COM-74-10917

Highway Traffic Noise (73) Jun 74
COM-74-10971

Industrialized Housing (159) Jun 74
COM-74-10982

Flood Control (191) 1972-Jul 74
COM-74-11201

Urban Information Systems (196) 1970-Aug 74 Includes USAC reports
COM-74-11319

Air Quality Monitoring (121) 1970-Jul 74
COM-74-11380

The Elderly (139) Sep 74
COM-74-11393

Building Fires (143) Sep 74
COM-74-11534

Urban Air Pollution (153) 1970-Nov 74
NTIS/PS-74/104

Urban Noise Pollution (66) 1970-Nov 74
NTIS/PS-74/106

Urban Sewage Treatment Planning (134) 1970-Nov 74
NTIS/PS-74/107

Urban Storm Sewers and Water Runoff (229) Nov 74
NTIS/PS-74/108

Quality of Life in the Urban Environment (131) 1970-Dec 74
NTIS/PS-74/125

Housing (121) 1970-Dec 74
NTIS/PS-74/132

Riots and Riot Control (110) Jan 75
NTIS/PS-75/003

Rehabilitation of Criminal and Public Offenders (100) 1967-Oct 74
NTIS/PS-75/005

Pedestrian Movement and Safety (70) 1968-Oct 74
NTIS/PS-75/006

Disasters (131) Dec 74
NTIS/PS-75/007

The Use of Dogs to Detect Explosives and Narcotics (24) Jan 75
NTIS/PS-75/043

Crime Prevention and Enforcement Through Community Relations (72) Jan 75
NTIS/PS-75/047

Behavior and Psychology as Related to Law Enforcement (103) Jan 75
NTIS/PS-75/056

De-icing Materials and Techniques for Roads and Runways (92) Jan 75
NTIS/PS-75/081

The Use of the Mass Media by Local and Regional Governments (58) Jan 75
NTIS/PS-75/083

Remote Sensing for Natural Resource, Environmental, and Regional Planning (91) 1973-Jan 75
NTIS/PS-75/104

Tracked Air Cushion Vehicles and Magnetic Levitation (70) Dec 74
NTIS/PS-75/114

Minority Business (71) Jan 75 Excludes regional and socioeconomic studies
NTIS/PS-75/119

Economic Development of Ethnic Minorities (86) Jan 75
NTIS/PS-75/120

Recreational Boating (71) Jan 75
NTIS/PS-75/141

Tourism and Travel in the United States (85) Jan 75
NTIS/PS-75/148

Ghettos (69) Jan 75
NTIS/PS-75/168

Emergency Medical Services and Care (87) Jan 75
NTIS/PS-75/171

Highway Beautification (46) Jan 75
NTIS/PS-75/180

Regional and Urban Solid Waste Disposal. Part 1. Management Planning (81) Jan 75
NTIS/PS-75/184

Regional and Urban Solid Waste Disposal. Part 2. Local Case Studies (110) Jan 75
NTIS/PS-75/185

Regional and Urban Solid Waste Disposal. Part 3. Handling and Disposal Technology (84) Jan 75
NTIS/PS-75/186

Urban Financing and Taxation (95) Jan 75 Excludes financing of transportation and pollution control
NTIS/PS-75/199

Financing Urban Transportation. Part 1. General Studies (65) 1970-Jan 75
NTIS/PS-75/200

Financing Urban Transportation. Part 2. Local Studies (95) 1970-Jan 75
NTIS/PS-75/201

Financing and Taxation For Urban Control of Pollution (111) Jan 75
NTIS/PS-75/202

Housing Taxation and Financing by the Federal, State, and Local Governments (87) Jan 75
NTIS/PS-75/203

Citizen Participation in Local Government (99) Jan 75
NTIS/PS-75/216

Urban Parking (82) Feb 75
NTIS/PS-75/279

Dual Mode Transportation (77) Feb 75
NTIS/PS-75/287

Central City Redevelopment (54) Feb 75
NTIS/PS-75/301

Automobile Air Pollution. Part 1. Abatement Through Management and Planning (89) 1970-Jan 75
NTIS/PS-75/309

Population Mobility (127) Feb 75
NTIS/PS-75/323

Effects of Land Use and Urbanization on Water Resources (94) 1971-May 75
NTIS/PS-75/401

Urban Automated Traffic Control (114) May 75
NTIS/PS-75/403

BART and METRO--Rapid Transit for the San Francisco and Washington D.C. Areas (168) May 75
NTIS/PS-75/421

REPORTS & TRANSLATIONS

1. AERONAUTICS

1A. Aerodynamics

N75-21247/2GA PC$5.25/MF$2.25
National Aeronautics and Space Administration. Langley Research Center, Langley Station, Va.
Flow Visualization Study of Close-Coupled Canard Wing and Strake Wing Configuration.
D. D. Miner, and B. B. Gloss. 3 Mar 75, 115p
NASA-TM-X-72668

Descriptors: *Canard configurations, *Flow visualization, *Semispan models, *Swept wings, Aerodynamic interference, Angle of attack, Flow distribution, Vortices, Wind tunnel tests.

For abstract, see STAR 1313

N75-21248/0GA PC$6.25/MF$2.25
National Aeronautics and Space Administration. Langley Research Center, Langley Station, Va.
Longitudinal Aerodynamics of a Low-Wing Lift-Fan Transport Including Hover Characteristics in and out of Ground Effect.
D. R. Hoad, and G. L. Gentry, Jr.. Apr 75, 155p
NASA-TM-X-72670

Descriptors: *Hovering stability, *Longitudinal control, *Longitudinal stability, *Vertical takeoff aircraft, Ground effect, Transport aircraft, Wind tunnel tests.

For abstract, see STAR 1313

N75-21249/8GA PC$7.25/MF$2.25
National Aeronautics and Space Administration. Langley Research Center, Langley Station, Va.
Wind Tunnel Investigation of Helicopter-Rotor Wake Effects on Three Helicopter Fuselage Models.
J. C. Wilson, and R. E. Mineck. Mar 75, 209p
NASA-TM-X-3185, L-9454

Descriptors: *Aerodynamic characteristics, *Helicopter wakes, *Wind tunnel tests, Fuselages, Rotor aerodynamics, Yawing moments.

For abstract, see STAR 1313

N75-21250/6GA PC$3.25/MF$2.25
National Aeronautics and Space Administration. Lewis Research Center, Cleveland, Ohio.
Cold-Air Annular-Cascade Investigation of Aerodynamic Performance of Core-Engine-Cooled Turbine Vanes. 1: Solid-Vane Performance and Facility Description.
L. J. Goldman, and K. L. Mclallin. Apr 75, 25p
NASA-TM-X-3224, E-8214

Descriptors: *Aerodynamic characteristics, *Annular flow, *Cascade flow, *Stator blades, *Turbine blades, Cascade wind tunnels, Secondary flow.

For abstract, see STAR 1313

N75-21251/4GA PC$6.25/MF$2.25
Lockheed Aircraft Corp., Marietta, Ga.
High Reynolds Number Test of a Naca 651-213, a Equals 0.5 Airfoil at Transonic Speeds.
K. P. Burdges, J. A. Blackwell, Jr., and G. A. Pounds. Mar 75, 164p NASA-CR-2499
Contract NAS1-12325

Descriptors: *Airfoils, *Reynolds number, *Transonic speed, *Wind tunnel tests, Aerodynamic characteristics, Angle of attack, Compressible flow, Mach number, Transonic wind tunnels.

For abstract, see STAR 1313

1B. Aeronautics

AD-A011 077/5GA PC$3.75/MF$2.25
Federal Aviation Administration Oklahoma City Okla Flight Standards Technical Div
Concepts in Safety Belt Testing.
Final rept.,
James W. Ross, Jr. Apr 75, 40p Rept no. FAA-TR-FS-75-782-120A
Presented at the Business Aircraft Meeting of the Society of Automotive Engineers, Wichita, Kansas, 8-11 April 1975, as SAE-750540.

Descriptors: *Safety belts, *Reliability, *Aviation safety, Civil aviation, Harnesses, Retractable, Locking fastener devices, Static tests, Dynamic tests, Acceleration, Aviation accidents, Test equipment.
Identifiers: DOT/5A, DOT/4DZ/DA.

The purpose of the paper is to present concepts for more representative testing of inertia reels and shoulder harness assemblies. These concepts were explored as part of a study to determine design and performance criteria appropriate for civil aircraft safety belts.

N75-21255/5GA PC$4.25/MF$2.25
United Air Lines, Inc., Chicago, Ill.
Operational Flight Evaluation of the Two-Segment Approach for Use in Airline Service.
G. K. Schwind, J. A. Morrison, W. E. Nylen, and E. B. Anderson. Apr 75, 65p NASA-CR-2515
Contract NAS2-7208

Descriptors: *Aircraft guidance, *Airline operations, *Approach control, *Flight tests, Boeing 727 aircraft, Navigation aids, Noise reduction.

For abstract, see STAR 1313

PB-241 705/3GA PC$3.75/MF$2.25
National Transportation Safety Board, Washington, D.C. Bureau of Aviation Safety.
Aircraft Accident Report - Trans World Airlines, Inc. Boeing 707-331B, N8734 in the Ionian Sea.
26 Mar 75, 44p NTSB-AAR-75-7, File-1-0024

Descriptors: *Aviation accidents, *Accident investigations, Collision research, Civil aviation, Crash landing, Oceans, Greece, Sabotage, Passenger aircraft, Explosions.
Identifiers: Boeing 707 aircraft, DOT/5A, DOT/4DZ/DA.

At 0940 Greenwich mean time, September 8, 1974, Trans World Airlines, Inc., Flight 841, crashed into the Ionian Sea about 50 nmi west of Cephalonia, Greece. There were 79 passengers and 9 crewmembers on board; no one survived. The aircraft was destoyed. The National Transportation Safety Board determines that the probable cause of this accident was the detonation of an explosive device within the aft cargo compartment of the aircraft which rendered the aircraft uncontrollable.

1C. Aircraft

AD-A010 550/2GA PC$7.00/MF$2.25
LTV Aerospace Corp Dallas Tex Vought Systems Div
AAES Failure Modes and Requirements for AIMIS Interface.
Final rept. 22 Jan-1 Nov 74,
H. W. Heinzman, and J. R. Perkins. Dec 74, 183p
Rept no. 2-57110/4R-3187
Contract N62269-74-C-0265

Descriptors: *Avionics, *Display systems, *Electrical equipment, Aircraft equipment, Integrated systems, Power equipment, Cockpits, Instrumentation, Interfaces, Control systems, Solid state electronics, Multiplexing, Switching, Failure(Electronics), Electric power, Distribution.
Identifiers: AIMIS(Advanced Integrated Modular Instrumentation Systems), Advanced integrated modular instrumentation systems, AAES(Advanced Aircraft Electrical Systems), SOSTEL(Solid State Electric Logic), Solid state electric logic.

The study was conducted to lay the initial groundwork for a smooth and timely interface between the AIMIS (Advanced Integrated Modular Instrumentation System) and the AAES (Advanced Aircraft Electrical System). Primary failure modes of the SOSTEL (Solid State Electric Logic) system are identified. Level of criticality is indicated for each failure mode and priorities for display of malfunction information are established. Multimode switch approaches and interface memory requirements are discussed. Techniques are established for converting failure data into messages the pilot can immediately understand. A word code technique is recommended as a means for simplifying the SOSTEL/AIMIS interface and minimizing interface memory requirements. The A-7B power distribution and armament station control unit (ASCU) subsystems are used as the data base for the study.

AD-A010 593/2GA PC$3.75/MF$2.25
Air Force Flight Test Center Edwards AFB Calif
Deceleration System Trajectory Equations.
Final rept.,
Herbert Seaman. Apr 75, 30p Rept no. AFFTC-TIM-75-5

Descriptors: *Parachutes, *Descent trajectories, Deceleration, Canopies, Drag, Compressible flow, Incompressible flow, Equations of motion.
Identifiers: *Decelerators.

This memorandum presents a method of predicting selected performance characteristics of aerodynamic deceleration devices. Basic trajectory equations were developed and then expanded through the application of accepted principles which influence the performance of deceleration devices. Incompressible flow and compressible flow were considered. A particular set of equations were developed to model ribless guide surface parachute performance in the troposphere at speeds less than Mach 1. A comparison of samples of actual and predicted test data is also presented to illustrate the relative accuracy of this method of prediction.

AD-A010 652/6GA PC$3.25/MF$2.25
Army Aviation Systems Command St Louis Mo
Major Item Special Study (MISS), UH-1H Tail Rotor Blade.
Interim rept. Jan 64-Jun 74.
May 75, 21p Rept no. USAAVSCOM-TR-75-17

Descriptors: *Helicopters, *Tail helicopter rotors, *Value engineering, Logistics support, Quality control, Spare parts, Maintenance, Maintainability, Cost analysis, Failure.
Identifiers: *Failure analysis, *Logistics management, MISS(Major Item Special Studies), Major item special studies, H-1 aircraft, UH-1H aircraft.

Major Item Special Study (MISS) reports are performed on DA Form 2410 reportable components. These are time change items and certain condition change items selected because of high cost or need for intensive management. Basically, the MISS reports are concerned with analyzing reported removal data presented in the Major Item Removal Frequency (MIRF) report. The failure modes reported for each removal are examined and grouped into categories which are intended to clarify the intent of the data reporting. From this data, removal distribution can be plotted and an MTR

(Mean Time to Removal) can be calculated. The MISS reports then investigate possible cost savings based on total elimination of selected failure modes. These modes are chosen because of the percentage of failures they represent and/or because they appear to be feasible Product Improvement Program (PIP) areas.

AD-A010 661/7GA PC$5.75/MF$2.25
Advisory Group for Aerospace Research and Development Paris (France)
Electro-Optical Systems.
Lecture series.
May 75, 148p Rept no. AGARD-LS-76
NATO furnished.

Descriptors: *Electrooptics, *Display systems, Avionics, Low light levels, Television display systems, Infrared detection, Infrared optical systems, Flight helmets, Optical radar, Fiber optics, Human factors engineering, Space navigation, Control, Guidance, Night vision, NATO.
Identifiers: Design.

Contents: Sessions I and II - Aircraft nav/attack system design and applications - Laser and low light level television systems; The application of displays in navigation/attack systems; Forward looking infrared systems; Helmet mounted sights and display systems; Session III - Human factors, human engineering and perception problems - Opto-electronic systems: perceptual limitations and display enhancement; Total cockpit implications of electro-optical displays; Two world displays - human engineering aspects; Optical fiber applications; Aircraft design implications of opto-electronic systems.

AD-A010 672/4GA PC$5.75/MF$2.25
Advisory Group for Aerospace Research and Development Paris (France)
Specialists Meeting on Wing-with-Stores Flutter.
Conference proceedings.
Apr 75, 134p Rept no. AGARD-CP-162
Papers presented at the Meeting of the Structures and Materials Panel in Munich (Germany) on 6-12 October 1974. NATO furnished.

Descriptors: *Jet fighters, *External stores, *Flutter, *Meetings, Wings, Oscillation, Aerodynamic loading, Aerodynamic forces, Subsonic flight, NATO.

The addition of the stores significantly changes the dynamic characteristics and often adversely affects the flutter properties through drastically reduced flutter speeds. Flutter speeds placards are thus frequently required thereby severely restricting potential speeds and mission performances. Moreover, many different stores can be carried at each carriage station requiring evaluation of a very high number of potentially flutter critical store combinations. The purpose of this meeting was to discuss the latest state-of-the-art in the various countries, and optimum methods for avoiding restrictive placards and for rapidly and economically evaluating the many store combinations. These proceedings contain the papers presented.

AD-A010 784/7GA PC$6.25/MF$2.25
Army Aviation Systems Command St Louis Mo
UH-1H Assessment and Comparative Fleet Evaluations.
Executive summary rept. (Final).
Apr 75, 175p Rept no. USAAVSCOM-TR-75-3

Descriptors: *Helicopters, *Maintainability, Maintenance, Operational readiness, Life cycles, Cost analysis, Reliability, Failure.
Identifiers: H-1 aircraft, UH-1H aircraft.

The purpose of the executive summary is to provide an overview and summarization of the UH-1H assessment. The parameters presented provide management perspective of the UH-1H fleet, in addition to comparative fleet evaluations. Various presentations of RAM related parameters give the present system posture of the UH-1H fleet.

AD-A010 794/6GA PC$4.75/MF$2.25
Naval Postgraduate School Monterey Calif
Flow Visualization Studies of the XFV-12A.
Master's thesis,
Charles Lewis Peterson. Mar 75, 92p

Descriptors: *Vertical takeoff aircraft, *Flow visualization, Vortex shedding, Thrust augmentation, Potential flow, Lifting surfaces, Wind tunnel models, Theses, Computer programs, Finite difference theory.
Identifiers: V-12 aircraft, XFV-12A aircraft.

The XFV-12A incorporates thrust augmentation to generate propulsive lift. Under the influence of forward flight the lift jets are subject to bending, which produces shed vortices that induce velocities at the aircraft. Additionally, operations in ground effect during hover and for small forward velocities can result in reingestion of engine exhaust gases. The objectives of this thesis were twofold. The first was to investigate analytically aspects of the vortex shedding phenomenon through the application of potential flow around the lifting surfaces of the aircraft. Secondly, experimental analysis was performed to determine the unique reingestion properties of the XFV-12A operating statically under various wing and canard configurations.

AD-A010 795/3GA PC$4.75/MF$2.25
Naval Postgraduate School Monterey Calif
A Flight Test Determination of the Static and Dynamic Longitudinal Stability of the Cessna 310H Aircraft.
Master's thesis,
William Harvey Siren. Jun 75, 77p

Descriptors: *Aircraft, *Flight testing, Aerodynamic stability, Flight maneuvers, Flight instruments, Theses.
Identifiers: Cessna 310H aircraft, General aviation aircraft.

An investigation was made of the static and dynamic longitudinal stability of a Cessna 310H aircraft. Stick-fixed and stick-free neutral points were determined for both the cruise and approach configurations. Stick-fixed and stick-free maneuver points were determined for the cruise configuration. Values of the neutral points and maneuver points were also obtained from a theoretical analysis for comparison purposes. The longitudinal long period, or phugoid, mode was investigated for the stick-fixed and stick-free cases and for widely separated center of gravity locations.

AD-A010 796/1GA PC$5.25/MF$2.25
Naval Postgraduate School Monterey Calif
A Research Study of the Rotary Wing Test and Evaluation Segments at the Naval Air Test Center, Patuxent River, Maryland.
Master's thesis,
Bruce Leon Valley. Jun 75, 105p

Descriptors: *Helicopters, *Maintenance management, *Management planning and control, Naval shore facilities, Naval planning, Questionnaires, Maintenance, Theses, Maryland.
Identifiers: Naval Air Test Center.

This study examined the organizational and aircraft maintenance problems of the rotary wing segments within the organizations at the Naval Air Test Center, Patuxent River, Maryland. A static and dynamic analysis was conducted, a model of a consolidated rotary wing organization constructed, and a questionnaire distributed, collected, and evaluated to determine the attitudes of various NATC personnel groups, military and civilian, toward pertinent issues. A critical analysis was also conducted of the new NATC mission-oriented directorate organization scheduled for implementation on 1 Apr 1975.

AD-A010 824/1GA PC$4.75/MF$2.25
Naval Weapons Engineering Support Activity Washington D C
Statistical Calculation and Analysis for the Logistics of Engine Removal (Scaler) Methodology,
James P. Matthesen. Feb 75, 81p Rept no. NAVWESA-R-7502

Descriptors: *Aircraft engines, *Removal, Life cycles, Management planning and control, Logistics, Maintenance, Predictions, Statistical analysis.

SCALER was developed in 1973-74 for the Engine Life Management Group (ELMG) as the Navy's self-validating actuarial method of statistically projecting aircraft engine removals and rework requirements, and of periodically providing management a usable analysis of removal data. The method separates the effects due to administrative policy changes, statistical fluctuations, changes in engine age populations, and changes in engine reliability. The report describes the method, assumptions, calculations, and output reports.

AD-A010 979/3GA PC$3.25/MF$2.25
Rand Corp Santa Monica Calif
Ideas for USAF RPV Development (A Transcript of an Informal Talk),
W. B. Graham. Jul 74, 11p Rept no. P-5329

Descriptors: *Remotely piloted vehicles, Systems engineering, Management planning and control, Target discrimination, Data links, Tactical warfare, Decoys.

Suggested is a philosophy of RPV development, leading to a plan of action: build some very simple, cheap systems, test them and learn from the tests. Then go on to build some other types, extending their range or whatever performance measure seems to be most important based on the tests of the earlier RPVs.

AD-912 998/2GA PC$4.75/MF$2.25
Aeronautical Systems Div., Wright-Patterson AFB, Ohio.
Aircraft Avionics (Digital Avionics Study).
Final rept.,
Boris E. Bright, Berhard List, William Sen, Erwin C. Gangl, and Marvin Hammond. Apr 73, 87p ASD-TR-73-18-Vol-1
Errara sheet inserted. Distribution Limitation now Removed. See also AD-916 533.

Descriptors: *Aircraft equipment, *Electronic equipment, Digital systems, Computers, Interfaces, Multiplexing, Detectors, Standardization, Integrated systems, Weapon systems, Costs, Reliability(Electronics), Jet fighters, Cost effectiveness, Air traffic control systems, Communication satellites(Active), Data transmission systems, Radar, Electrooptics, Navigation, Voice communications, Systems engineering, Display systems, Circular error probable, Very low frequency, Radar beacons, Flight control systems, Failure(Electronics).
Identifiers: *Avionics, Computer architecture, Computer hardware, Computer programs, Data management.

Current USAF avionics acquisition practices breed 'black box' proliferation with all its attendant high costs, low reliability, and heavy O & M burden. This is happening while digital technology threatens to inundate the service lo-

gistic channels. Enough technology is in hand to create prototype 'digital avionics'. Software turns out to be the single most deficient technical area. The board concludes that properly exercised avionics general systems engineering (GSF) can cause the much needed turn about in this avionics situation. The board has identified practices and facilities needed to adequately conduct avionics GSE (Chapters II, III, and IV).

N75-21256/3GA PC$5.25/MF$2.25
Bell Helicopter Co., Fort Worth, Tex.
Conceptual Design Study of 1985 Commercial Tilt Rotor Transports. Volume 1: Vtol Design Summary.
Final Report.
J. A. Detore, and K. W. Sambell. May 75, 115p NASA-CR-2544, D312-099-002-VOL-1
Contract NAS2-8259

Descriptors: *Aircraft design, *Commercial aircraft, *Tilting rotors, *Vertical takeoff aircraft, Design analysis, Systems engineering, Transport aircraft.

For abstract, see STAR 1313

N75-21267/0GA PC$5.25/MF$2.25
Arde, Inc., Mahwah, N.J.
Fabrication and Testing of Prestressed Composite Rotor Blade Spar Specimens.
Final Report.
D. Gleich. Oct 74, 113p NASA-CR-132611, ARDE-J/N-41004
Contract NAS1-11594

Descriptors: *Composite materials, *Fracture strength, *Impact resistance, *Rotary wings, Crack propagation, Glass fibers, Helicopter propeller drive, Impact tests, Prestressing, Stainless steels, Terminal ballistics.

For abstract, see STAR 1313

N75-21268/8GA PC$4.25/MF$2.25
Lockheed-California Co., Burbank.
Advanced Supersonic Technology Concept Study: Hydrogen Fueled Configuration, Summary Report.
G. D. Brewer, and R. E. Morris. Apr 75, 53p NASA-CR-2534, LR-26322
Contract NAS2-7732

Descriptors: *Aircraft performance, *Economic analysis, *Hydrogen fuels, *Supersonic transports, Aircraft configurations, Aircraft noise, Arrow wings.

For abstract, see STAR 1313

N75-21269/6GA PC$5.75/MF$2.25
United Air Lines, Inc., Denver, Colo.
Engineering Flight and Guest Pilot Evaluation Report, Phase 2.
J. A. Morrison, E. B. Anderson, G. W. Brown, and G. K. Schwind. 15 Nov 74, 143p NASA-CR-137664
Contract NAS2-7475

Descriptors: *Dc 8 aircraft, *Flight simulation, *Flight tests, *Performance prediction, Navigation aids, Systems engineering, Terminal guidance.

For abstract, see STAR 1313

N75-21270/4GA PC$4.25/MF$2.25
National Aeronautics and Space Administration. Langley Research Center, Langley Station, Va.
Dynamic-Stability Tests on an Aircraft Escape Module at Mach Numbers from 0.40 to 2.16.
Final Report.
E. E. Davenport, and R. A. Kilgore. 16 Apr 75, 58p NASA-TM-X-72680

Descriptors: *Aerodynamic stability, *Escape capsules, *Escape systems, *Military aircraft, Dynamic stability, Forced vibration, Stable oscillations, Wind tunnel tests.

For abstract, see STAR 1313

N75-21271/2GA PC$3.75/MF$2.25
National Aeronautical Establishment, Ottawa (Ontario).
Correlation of Fatigue Data for Aluminum Aircraft Wing and Tail Structures.
R. Hangartner. Dec 74, 48p NRC-14555, LR-582

Descriptors: *Aircraft structures, *Aluminum, *Data correlation, *Fatigue (Materials), Airfoils, Fatigue tests, Loads (Forces), Performance prediction, Reliability analysis, Tail assemblies.

For abstract, see STAR 1313

N75-21289/4GA PC$6.25/MF$2.25
Boeing Commercial Airplane Co., Seattle, Wash.
Redundant Actuator Development Program.
Final Report.
C. C. Chenoweth, D. M. Fain, and C. I. Svensson. Apr 75, 170p NASA-CR-137656, D6-46457
Contract NAS2-7966

Descriptors: *Actuators, *Aircraft design, *Flight control, Aircraft configurations, Redundancy, Reliability engineering, Systems engineering.

For abstract, see STAR 1313

PAT-APPL-566 459/GA PC$3.25/MF$2.25
Department of the Navy Washington D C
Convertible Canopy-to-Wing Shaped Parachute.
Patent Application,
Jon T. Matsuo. Filed 9 Apr 75, 12p Rept no.
Government-owned invention available for licensing. Copy of application available NTIS.

Descriptors: *Parachutes, *Parachute canopies, Parachute descents, Deployment, Lift to drag ratio, Gliding, Patents.
Identifiers: *Patent applications, PAT-CL-244-145.

The patent application relates to parachute construction, and more particularly to a parachute canopy that can be converted by the parachutist from one having a standard canopy configuration, to a wing-shaped canopy having a high lift-over-drag configuration.

1D. Aircraft Flight Control and Instrumentation

AD-A010 834/0GA PC$4.75/MF$2.25
Naval Postgraduate School Monterey Calif
Evaluation of an Integrated Electronic Instrument Display for Helicopter Hover Operations Using a Six-Degree-of-Freedom Fixed-Base Simulation.
Master's thesis,
Larry Richard Ammerman. Mar 75, 95p

Descriptors: *Display systems, Instrument flight, Helicopters, Cockpits, Flight instruments, Integrated systems, Instrumentation, Hovering, Computerized simulation, Computer programs, Theses, FORTRAN, Degrees of freedom.
Identifiers: Evaluation, Six degrees of freedom, SH-2F aircraft, H-2 aircraft, FORTRAN 4 programming language.

The report discusses the development and evaluation of an integrated electronic instrument display designed to help alleviate pilot work load and improve aircraft control during the precision hover task while flying solely by reference to instruments. The evaluation uses a hybrid computer system to implement a six-degree-of-freedom fixed-base simulation of the SH-2F helicopter and a graphics processor to generate the integrated instrument display. Evaluation pilots were asked to rate the integrated display against conventional flight instruments after flying a simulated night overwater rescue mission. The evaluation revealed that the simulated aircraft dynamics were susceptible to pilot induced oscillations in a hover and, therefore, unsatisfactory for use as an evaluation tool. In general, the evaluation pilots considered the integrated display preferable to conventional cockpit instruments; however, further study is recommended since meaningful quantitative data were not obtained.

AD-A010 875/3GA PC$5.25/MF$2.25
Naval Postgraduate School Monterey Calif
A New Parameter Optimization Method Applied to Autopilot Design.
Master's thesis,
M. A. S. MacNamara. Mar 75, 116p

Descriptors: *Automatic pilots, *Optimization, Compensators, Feedback, Short takeoff aircraft, Aerodynamic control surfaces, Computer programs, Theses, FORTRAN.
Identifiers: C-8A aircraft, C-8 aircraft.

An investigation of a method for finding an optimum compensator for use in an autopilot is described. Given a structure with a number of real poles and zeros which is steady-state decoupled, the pole-zero locations are chosen to give a system response as close as possible to a desired response. The desired response can be any one or a combination of system outputs. The computer is used to optimize the pole-zero locations by means of a function minimization program.

N75-21254/8GA PC$3.75/MF$2.25
National Aeronautics and Space Administration. Ames Research Center, Moffett Field, Calif.
Stol Terminal Area Operating Systems (Aircraft and Onboard Avionics, ATC, Navigation Aids).
C. Burrous, H. Erzberger, N. Johnson, and F. Neuman. Nov 74, 50p NASA-TM-X-62403, A-5829

Descriptors: *Aircraft instruments, *Avionics, *Navigation aids, *Short takeoff aircraft, Air traffic control, Flight simulation, Flight tests.

For abstract, see STAR 1313

PAT-APPL-420 836/GA PC$3.25/MF$2.25
Department of the Navy Washington D C
High Load, Quick-Disconnect Link.
Patent Application,
Theodore C. Bennett. Filed 3 Dec 73, 13p Rept no.
Government-owned invention available for licensing. Copy of application available NTIS.

Descriptors: *Flight control systems, *Disconnect fittings, Remote control, Training planes, Linkages, Detents, Patents.
Identifiers: *Patent applications, PAT-CL-244-84.

The patent application relates to a disconnectable link for a mechanical control system such as an aircraft flight control system enabling remote decoupling and engagement of secondary flight controls from primary controls at a primary control station during emergency conditions. An electrically or fluid activated rod is moved longitudinally against the force of a spring, and a cam mounted on the rod disen-

gages detent balls linking a sleeve member to an extension member.

1E. Air Facilities

AD-A010 723/5GA PC$3.25/MF$2.25
Air Force Civil Engineering Center Tyndall AFB Fla
Methods for Reducing the Slipperiness of Painted Runway Markings.
Interim rept. 1 Jun 74-1 Apr 75,
Thomas J. Black, III. May 75, 24p Rept no. AFCEC-TR-75-8

Descriptors: *Pavements, *Runways, *Skidding, Markers, Paints, Removal, Bituminous coatings, Test methods, Surfaces, Traction, Test equipment, Military facilities.
Identifiers: Portland cements.

The project investigated four test sections on asphaltic concrete (AC) and eight test sections on Portland cement concrete (PCC) for methods of reducing runway paint marking slipperiness. Periodic paint removal enables AC surfaces to maintain adequate skid resistance. Mixing small, angular aggregate with the glass spheres for the standard airfield marking maintains skid resistance at least equal to that of the adjacent unmarked pavement.

NTIS/PS-75/518/1GA
PC$25.00/MF$25.00
National Technical Information Service, Springfield, Va.
Airfield Pavements. Volume 1. 1964-1970 (A Bibliography with Abstracts).
Rept. for 1964-Dec 70,
Guy E. Habercom, Jr. Jun 75, 164p*
See also Volume 2, NTIS/PS-75/519.

Descriptors: *Bibliographies, *Aircraft landing areas, *Pavements, Concrete pavements, Flexible pavements, Skid resistance, Durability, Wear resistance, Surface properties, Pavement bases, Drainage, Runways, Landing fields.

Airfield pavement structures are analyzed and evaluated for durability, wear and skid resistance, and surface qualities in these Government-sponsored research reports. (Contains 159 abstracts).

NTIS/PS-75/519/9GA
PC$25.00/MF$25.00
National Technical Information Service, Springfield, Va.
Airfield Pavements. Volume 2. 1971-1972 (A Bibliography with Abstracts).
Rept. for Jan 71-Dec 72,
Guy E. Habercom, Jr. Jun 75, 128p*
See also Volume 1, NTIS/PS-75/518, and Volume 2, NTIS/PS-75/520.

Descriptors: *Bibliographies, *Aircraft landing areas, *Pavements, Concrete pavements, Flexible pavements, Skid resistance, Durability, Wear resistance, Surface properties, Pavement bases, Drainage, Runways, Landing fields.

Airfield pavement structures are analyzed and evaluated for durability, wear and skid resistance, and surface qualities in these Government-sponsored research reports. (Contains 123 abstracts).

NTIS/PS-75/520/7GA
PC$25.00/MF$25.00
National Technical Information Service, Springfield, Va.
Airfield Pavements. Volume 3. 1973-1975 (A Bibliography with Abstracts).
Rept. for Jan 73-Jun 75,
Guy E. Habercom, Jr. Jun 75, 116p*
See also Volume 2, NTIS/PS-75/519.

Descriptors: *Bibliographies, *Aircraft landing areas, *Pavements, Concrete pavements, Flexible pavements, Skid resistance, Durability, Wear resistance, Surface properties, Pavement bases, Drainage, Runways, Landing fields.

Airfield pavement structures are analyzed and evaluated for durability, wear and skid resistance, and surface qualities in these Government-sponsored research reports. (Contains 111 abstracts).

N75-21295/1GA PC$4.75
National Aeronautics and Space Administration. Ames Research Center, Moffett Field, Calif.
San Francisco Floating Stolport Study.
28 Feb 74, 89p NASA-TM-X-72432
Conf-Prepared in Cooperation with FAA Washington, D. C. And Greater San Francisco Chamber of Commerce. Misc-Original Contains Color Illustrations.

Descriptors: *Airport planning, *Environment effects, *San francisco (Ca), *Short takeoff aircraft, Air pollution, Air traffic, Economic analysis, Feasibility analysis, Land use, Noise pollution, Sites.

For abstract, see STAR 1313

2. AGRICULTURE

2C. Agricultural Engineering

E75-10285 PC$3.25/MF$2.25
Agricultural Research Service, Weslaco, Tex.
Irrigation Scheduling, Freeze Warning and Soil Salinity Detecting.
Monthly progress rept. no. 17.
May 75, 18p NASA-CR-142722
NASA Order T-4105-B

Descriptors: *Irrigation, Freezing, Soils salinity, Texas, EREP, Skylab program Multispectral band scanners, Vegetation.

The author has identified the following significant results. Correlations of multispectral scanner (MSS) digital data differences between vegetated and bare soil areas with salinity levels from the eight saline areas using MSS bands seven and ten in the infrared region were significant. Correlations were derived for Cameron County, Texas. Detection of saline soils may be possible, using either film density readings or multispectral scanner data, when the lower reflectance of vegetation on highly saline soil and the higher reflectance of vegetation on lower saline soil are considered by using film or MSS contrasts between vegetation and bare soil.

N75-21778/6GA PC$7.25/MF$2.25
National Aeronautics and Space Administration. Lyndon B. Johnson Space Center, Houston, Tex.
The ERTS-1 Investigation (Er-600). Volume 1: Erts-1 Agricultural Analysis.
Progress Report, Jul. 1972 - Jun. 1973.
R. B. Erb. Nov 74, 209p NASA-TM-X-58117, JSC-08456-VOL-1
Seri-7. Misc-Original Contains Color Illustrations.

Descriptors: *Agriculture, *Crop identification, *Farmlands, *Land use, *Multispectral photography, *Resources management, Computer techniques, Data processing, Earth resources program, Mapping, Photointerpretation.

For abstract, see STAR 1313

PB-242 386/1GA PC$7.50/MF$2.25
Idaho Univ., Moscow. Water Resources Research Inst.
Methodology for Obtaining Least Cost Irrigation System Specifications.
Doctoral thesis,
John Robert Busch. Nov 74, 232p W75-08482, OWRT-B-028-IDA(2)

Descriptors: *Irrigation, *Cost analysis, Linear programming, Mathematical models, Optimization, Constraints, Water wells, Pumping, Computer programs, Cost reduction, Pipelines, Renovating, Efficiency, Theses, Idaho.
Identifiers: Jefferson County(Idaho).

A methodology for obtaining least cost irrigation system specifications was developed and applied. Irrigation systems, as defined, consisted of application system and distribution components and did not include reservoirs of any type. An analytical model employing a two-stage dynamic linear-programming technique was used to select and arrange system components such that a least cost overall system would result. Based on cost function, more costly and less efficient distribution system component combinations were eliminated. Linear and parametric programming were applied to the model in North Rigby Irrigation District, Jefferson County, Idaho to determine least cost rehabilitation schemes for various specified conditions. Results showed that the analytical model is a valid tool.

2D. Agronomy and Horticulture

AD-A010 601/3GA PC$3.75/MF$2.25
Purdue Univ Lafayette Ind Dept of Agronomy
Evaluating a Magnesium-Ammonium Phosphate Suspension as a Fertilizer Material.
Interim rept. Mar-Oct 74,
Eldon L. Hood. 12 Dec 74, 29p NAD-CR-RDTR-283

Descriptors: *Fertilizers, *Phosphorus, *Wastes(Industrial), *Pyrotechnics, Phosphates, Plant tissue, Growth(General), Plants(Botany), Grasses, Soil tests, Effectiveness, Correlation techniques, Waste disposal.
Identifiers: *Solid waste disposal, Magnesium ammonium phosphates, Evaluation.

Objectives of the study were as follows: (1) Compare magnesium-ammonium-phosphate (MAP) with a standard granular fertilizer such as triple superphosphate (TSP) for their plant feeding properties; (2) Evaluate both materials over a wide range of treatment rates; (3) Observe the capacity of these materials to stimulate legume seedlings in an established grass sod; (4) Investigate nutrient uptake by the growing crop as measured by plant tissue analyses; and, (5) Examine changes in soil fertility levels as affected by rate and source of phosphorus carrier.

JPRS-64721 PC$4.25/MF$2.25
Joint Publications Research Service, Arlington, Va.
Catalog on the Study of the Resistance of Grain Crops to Types of Smut,
V. I. Krivchenko, D. V. Myagkova, L. G. Shchelko, V. N. Soldatov, and Z. V. Timoshenko. 8 May 75, 62p
Trans. of Katalog po Izucheniyu Ustoichivosti Zernovykh Kulturkvidam Golovni (USSR) n72 p3-68 1971.

Descriptors: *Smuts(Fungi), *Grain crops, Tolerances(Physiology), Wheat plants, Barley plants, Oat plants, Translations, USSR.

The report contains results of research on the resistance characteristics of the varietal samples of wheat, barley and oats to types of loose smut.

JPRS-64722 PC$3.75/MF$2.25
Joint Publications Research Service, Arlington, Va.
Catalog of Spring Wheat Samples with Characteristics of Their Resistance to Brown Rust, Stem Rust, Loose Smut, Bunt and Powdery Mildew,
M. M. Yakubtsiner, V. I. Krivchenko, D. V. Myagkova, O. G. Grigoreva, and S. I. Traynina. 8 May 75, 36p
Trans. of Katalog Obraztsov Yarovoi Pshenitsy s Kharakteristikoi ikh Ustoichivosti k Vozbuditelyam Buroi i Steblevoi Rzhavchiny, Pylnoi i Tverdoi Golovni, Muchnistoi Rosy (USSR) n124 p1-37 1973.

Descriptors: *Smut(Fungi), *Rusts(Fungi), *Fungus diseases, *Wheat plants, Tolerances(Physiology), Spring season, Tables(Data), Translations, USSR.
Identifiers: Spring wheat plants, Evaluation.

The report contains the results of studying two basic species of soft and durum wheat relating to their resistance to species of brown and stem rust, loose smut and powdery mildew and common bunt.

PB-241 052/0GA PC$3.25
Wisconsin Univ., Madison.
Water and Nitrogen Balance on Potatoes Grown on Irrigated Sandy Soils,
P. G. Saffigna, D. R. Keeney, C. B. Tanner, and M. G. Kirkham. 1973, 10p NSF/RA/E-73-190
Grant NSF-GI-29731
Proceedings of the 1973 Fertilizer and Aglime Conference Vol. 12, p 30-37, 16-17 Jan 73, Madison, Wis.

Descriptors: *Potato plants, *Irrigation, *Water consumption, *Fertilizers, Meetings, Sands, Inorganic nitrates, Leaching, Water pollution, Ground water, Soil properties, Rainfall, Fertilizing.
Identifiers: Irrigation water, Water utilization, Path of pollutants.

Because of the physical properties of sandy soils such as those in central Wisconsin, irrigated croping systems, especially with crops requiring considerable nitrogen fertilizer (such as potatoes), must be managed very carefully in order to avoid (1) inefficient water use, (2) inefficient nitrogen fertilizer use, and/or (3) nitrate pollution of ground water supplies. Results of an experiment concerned with water use and nitrate movement in sandy soils are reported. The results show that nitrogen and fertilizer practices with irrigated potatoes can be managed to minimize nitrate leaching. This can be done by providing smaller, more frequent irrigations which take rainfall into account and by timing nitrogen fertilization to better approximate plant needs.

2F. Forestry

NTIS/PS-75/483/8GA
PC$25.00/MF$25.00
National Technical Information Service, Springfield, Va.
Forest Management (A Bibliography with Abstracts).
Rept. for 1964-Jun 75,
Robena J. Brown. Jun 75, 128p*
Supersedes COM-74-10406.

Descriptors: *Forest trees, *Bibliographies, *Management, Plant growth, Watersheds, Lumbering, Reforestation, Forest fires, Inventories, Water pollution, Plant diseases, Remote sensing, Pest control.
Identifiers: *Forest management, Prescribed burning, Silviculture.

Studies cover silviculture, tree diseases and pests, timber cutting methods, watershed management, sustained yield methods, and forest inventories. (Contains 123 abstracts).

3. ASTRONOMY AND ASTROPHYSICS

3A. Astronomy

AD-A010 563/5GA PC$3.25/MF$2.25
California Univ Berkeley Statistical Lab
Field Galaxies and Cluster Galaxies: Abundances of Morphological Types and Corresponding Luminosity Functions,
Jerzy Neyman, and Elizabeth L. Scott. 1974, 14p ARO-10913.4-M
Grant DA-ARO-D-31-124-73-G31
Availability: Pub. in Confrontation of Cosmological Theories with Observational Data, p129-140 1974.

Descriptors: *Galaxies, *Luminosity, Intensity, Catalogs, Morphology, Classification, Astrophysics, Astronomy, Reprints.
Identifiers: Field Galaxies, Cluster Galaxies.

With reference to theory published earlier, formulas are given for the estimation of (1) abundances of morphological types among field galaxies, (2) of selection probabilities, and (3) of space luminosity functions. Strictly, the theory applies to 'homogeneous classes' of galaxies. This term designates a category of galaxies, say C, so finely defined that the probability, of a galaxy of category C will be included in the catalogue depends on its photographic apparent magnitude m and on nothing else. The practical use of the theory is illustrated on data in the HMS Catalogue. It appears that certain combinations of the Hubble morphological types satisfy the definition of a homogeneous class. Such, for example, is the case for combinations of ellipticals E0-E3 and, separately, of spirals Sc, Scp, SBc. However, the combination of these two categories is not a homegeneous class. In order to validate the theory empirically, calculations were performed to predict the abundances of eight combinations of morphological types among cluster galaxies listed in the HMS Catalogue, each combination being treated as a distinct homogeneous class. Add1tional hypotheses underlying these calculations are: (a) abundances of morphological types, (b) luminosity functions of these types, and (c) selection probabilites for cluster galaxies coincide with those for field galaxies. A comparison with the observations reaching the value of z=0.07, is satisfactory. This tends to validate the combination of formulas (i), (2), (3) with the additional hypotheses (a), (b) and (c). Incidentally, the result tends to support the steady state cosmology.

N75-22216/6GA PC$4.25/MF$2.25
National Aeronautics and Space Administration. Marshall Space Flight Center, Huntsville, Ala.
A Timeline Algorithm for Astronomy Missions.
J. E. Moore, and O. T. Guffin. Apr 75, 57p NASA-TM-X-64921

Descriptors: *Algorithms, *Mission planning, *Spaceborne astronomy, Heuristic methods, Mathematical models, Scheduling, Sequencing.

For abstract, see STAR 1313

3B. Astrophysics

AD-A010 597/3GA PC$3.25/MF$2.25
Aerospace Corp El Segundo Calif Lab Operations
The Aerospace Corporation Space Science Report to Cospar for CY 1974.
Interim rept.,
George A. Paulikas. 7 May 75, 17p Rept no. TR-0075(5260-10)-5 SAMSO-TR-75-128
Contract F04701-74-C-0075

Descriptors: *Solar physics, *Magnetosphere, *Upper atmosphere, Solar corona, Aurorae, Solar x rays, Atmospheric density, Manned spacecraft.
Identifiers: SKYLAB program.

The results obtained during 1974 by the space research program of The Aerospace Corporation are presented. Research projects dealing with the aurora, the magnetosphere, the earth's upper atmosphere as well as the solar corona are described.

AD-A011 078/3GA PC$3.25/MF$2.25
Owens Valley Radio Observatory Pasadena Calif
OH and H2O Masers in the Monoceros-R2 Molecular Cloud,
G. R. Knapp, and Robert L. Brown. 1975, 19p
Rept no. 1975-7
Contract N0004-67-A-0094-0019

Descriptors: *Extraterrestrial radio waves, *Masers, *Interstellar matter, Magnetic fields, Astrophysics, Water vapor, Hydroxyl radicals, Spectrum analysis.
Identifiers: *Astronomical spectroscopy, Microwave spectra.

Emission from OH and H2O masers has been detected in the direction of the Monoceros-R2 molecular cloud. Only the 1612 and 1665 MHz OH lines are observed, and from the emission characteristics of the sources the authors conclude that they arise in different locations. Two velocity components of the 1665 MHz source are highly linearly polarized (about 100%). This result allows the determination of limits on the magnetic field strength in the emission region, 3 times 10 to the -6th <<B<< 4 times 10 to the -4th Gauss, and to estimate its orientation. The relation of the maser emission to the embedded HII region and to the IR sources in this cloud is discussed. The Mon-R2 region is similar to the Orion nebula complex, and appears to represent a somewhat earlier stage of star formation.

AD-A011 098/1GA PC$3.25/MF$2.25
Owens Valley Radio Observatory Pasadena Calif
CO Observations of the Expanding Envelope of IRC+10216 (8),
T. B. H. Kuiper, G. R. Knapp, S. L. Knapp, and Robert L. Brown. 1975, 25p Rept no. 1975-8
Contracts N00014-67-A-0094-0019, NAS7-100
Sponsored in part by Grant NSF-GP-30400.

Descriptors: *Extraterrestrial radio waves, Stars, Emission spectra, Carbon monoxide, Spectrum analysis.
Identifiers: *Astronomical spectroscopy, *Microwave spectra, Infrared stars.

The authors report high-sensitivity emission profiles from the J = 0-1 transitions of (12C16O) and (13C16O) towards IRC+10216. It appears that the spherically symmetric uniform mass-outflow model proposed by Morris (1975) is necessary to describe the line profiles. The outflow appears to be slightly accelerated, having a velocity of 15 km/sec at the edges of the CO cloud, compared with 12 km/sec for the more centrally confined molecules.

COM-75-50193-368-1/GA MF$2.25
National Geophysical and Solar-Terrestrial Data Center, Boulder, Colo.
Solar-Geophysical Data Number 368. Part I (Prompt Reports). Data for March 1975-February 1975. Explanation of Data Reports Issued as Number 366 (Supplement) February 1975,
Hope I. Leighton. Apr 75, 107p SGD-368-Pt-1
NOAA-75051204
See also COM-75-50193-368-2.

Paper copy available from National Climatic Center, Attn: Publications. Federal Bldg., Asheville, N.C. 28801. Subscription $34.50/year includes Part 1 (Prompt Reports) and Part 2 (Comprehensive Reports); $18.00/year for either part. Annual supplement containing explanation is included. $1.40/copy for either part; $1.30 for extra issue.

Descriptors: *Solar activity, Ionospheric disturbances, Solar flares, Solar radio emission, Solar wind, Solar x rays, Protons, Solar cosmic rays, Scientific satellites, Tables(Data), Graphs(Charts), Statistical data.
Identifiers: OSO-5 satellite.

The bulletin gives various statistical and pictorial solar and geophysical data for the period February-March, 1975. The following aspects of solar activity are explored: Daily solar indices, solar flares, solar radio waves, solar wind measurements, solar x-ray radiation, and solar proton monitoring. Other topics include: Alert period, spacecraft observations, inferred IP magnetic field polarities, sudden ionospheric disturbances, cosmic rays, geomagnetic indices, and radio propagation indices.

COM-75-50193-368-2/GA MF$2.25
National Geophysical and Solar-Terrestrial Data Center, Boulder, Colo.
Solar-Geophysical Data Number 368. Part II (Comprehensive Reports). Data for October 1974-September 1974 and Miscellanea. Explanation of Data Reports Issued as Number 366 (Supplement) February 1975,
Hope I. Leighton. Apr 75, 65p SGD-368-Pt-2
NOAA-75051205
See also COM-75-50193-368-1.
Paper copy available from National Climatic Center, Attn: Publication. Federal Bldg., Asheville, N.C. 28801. Subscription $34.50/year includes Part 1 (Prompt Reports) and Part 2 (Comprehensive Reports); $18.00/year for either part. Annual supplement containing explanation is included. $1.40/copy for either part; $1.30 for extra issue.

Descriptors: *Solar activity, Solar flares, Magnetic storms, Solar radio emission, Solar x rays, Tables(Data), Graphs(Charts), Statistical data, Scientific satellites.
Identifiers: OSO-5 satellite.

The bulletin gives a comprehensive list of various solar and geophysical data for the period September - October, 1974. The three main categories are solar flares, solar radio waves, and magnetograms of geomagnetic storms. The three main categories are solar flares, solar radio waves, and magnetograms of geomagnetic storms. The following aspects of solar flares are explored: Confirmed solar flares, flare indices, unconfirmed solar flares, and no-flare-patrol charts. Data on solar radio waves include worldwide outstanding occurrences at fixed frequencies. A miscellaneous section contains x-ray spectroheliograms, OSO-5 data for January 1975.

COM-75-50332/6GA Not available NTIS
National Bureau of Standards, Washington, D.C.
Detection of Interstellar Trans-Ethyl Alcohol.
Final rept.,
A. E. Lilley, J. A. Ball, C. A. Gottlieb, M. M. Litvak, and H. Penfield. 15 Mar 75, 4p
Pub. in Astrophysical Jnl., v196 pL99-L102, 15 Mar 75.

Descriptors: *Ethanols, *Interstellar matter, Radio astronomy, Astronomical spectroscopy.
Identifiers: Reprints.

Three transitions of trans-ethyl alcohol (CH_3CH_2OH) were detected in emission toward the Sagittarius B2 molecular loud. The 6(06)-5(15) transition at 85,265.46 MHz, the 4(14)-3(03) transition at 90,117.51 MHz, and the 5815)-4(04) transition at 104,808.58 MHz were observed. The abundance of ethyl alcohol in the Sgr B2 cloud is comparable to that of many molecules previously detected there. Careful comparison of the abundance of ethyl alcohol which chemically related molecules such as its isomer dimethyl ether, acetaldehyde, and methyl alcohol may provide important information about mechanisms for molecular formation in the interstellar medium.

COM-75-50347/4GA Not available NTIS
National Bureau of Standards, Washington, D.C.
Observations of Circular Polarization of the J=2-1, v=1 Transition of the SiO Maser.
Final rept.,
Donald R. Johnson, and Frank O. Clark. 15 Apr 75, 4p
Pub. in Astrophysical Jnl., v197 pL69-L72, 15 Apr 75.

Descriptors: *Circular polorization, *Masers, *Astronomical spectroscopy, Silicon oxides, Transitions, Radio astronomy.
Identifiers: Reprints.

Circular polarization has been observed in the J = 2-1, v=1 SiO emission from the Orion A molecular source (OMC 1). The net polarization was observed at two different times separated by three days.

N75-22214/1GA PC$3.75/MF$2.25
Northwestern Univ., Evanston, Ill. Astronomy Dept.
Time Variations of Uv Emission Features of Be Stars.
Final Report, 1 Aug. 1972 - 31 Jan. 1975.
J. D. R. Bahng. 31 Jan 75, 35p NASA-CR-142618
Contract NGR-14-007-122

Descriptors: *Emission spectra, *Line spectra, *Stellar spectra, *Ultraviolet radiation, Astronomical models, Balmer series, H alpha line, Photoelectric effect, Variable stars.

For abstract, see STAR 1313

N75-22215/8GA PC$3.25/MF$2.25
Illinois Univ., Urbana. Dept. of Astronomy.
Very Long Baseline Interferometry Using a Communication Satellite.
Final Technical Report, Jun. - Sep. 1974.
G. W. Swenson, Jr.. 15 Mar 75, 13p NASA-CR-142667
Grant NSG-7030

Descriptors: *Communication satellites, *Radio interferometers, Extraterrestrial radio waves, Geos satellites (Esro), Interferometry, Radio telescopes.

For abstract, see STAR 1313

N75-22217/4GA PC$5.75/MF$2.25
American Science and Engineering, Inc., Cambridge, Mass.
Ans Hard X-Ray Experiment Development Program.
Final Report, Nov. 1970 - Sep. 1974.
D. Parsignault, H. Gursky, R. Frank, K. Kubierschky, and G. Austin. 30 Sep 74, 146p
NASA-CR-143724, ASE-3604
Contract NAS5-11350

Descriptors: *Astronomical netherlands satellite, *Spectral emission, *X ray sources, *X rays, Angular resolution, Bragg angle, Experimental design, Mechanical engineering, Proportional counters, Reliability engineering.

For abstract, see STAR 1313

N75-22218/2GA PC$5.25/MF$2.25
Princeton Univ., N.J. Dept. of Astrophysical Sciences.
Study of Permanent Magnet Focusing for Astronomical Camera Tubes.
Final Report.
D. C. Long, and J. L. Lowrance. 28 Feb 75, 109p
NASA-CR-143716
Contract NAS5-20507

Descriptors: *Astronomical photography, *Camera tubes, *Focusing, *Magnets, Computerized design, Digital computers, Large space telescope, Magnetic shielding, Modulation transfer function, Photoelectrons.

For abstract, see STAR 1313

N75-22219/0GA PC$7.25/MF$2.25
Belgian Royal Observatory, Brussels.
Yearbook of the Royal Belgian Astronomical Observatory, 1975 Annuaire de l'Observatoire Royal de Belgique, 1975.
1975, 214p
In French and Dutch.

Descriptors: *Earth satellites, *Moon, *Solar physics, *Tables (Data), Astronomical catalogs, Astronomical observatories, Astrophysics, Celestial bodies, Celestial mechanics.

For abstract, see STAR 1313

N75-22221/6GA PC$3.25/MF$2.25
Cornell Univ., Ithaca, N.Y. Center for Radiophysics and Space Research.
Far Infrared Spectroscopy of the Orion Nebula.
D. B. Ward. 1975, 11p NASA-CR-142697
Contract NGR-33-010-146

Descriptors: *Far infrared radiation, *Infrared spectroscopy, *Orion constellation, Electron density (Concentration), High resolution, Lear jet aircraft, Line spectra, Spectral resolution.

For abstract, see STAR 1313

N75-22229/9GA PC$3.25/MF$2.25
National Aeronautics and Space Administration. Goddard Space Flight Center, Greenbelt, Md.
Modelling the Magnetosphere of Mercury.
Y. C. Whang, and N. F. Ness. Apr 75, 23p NASA-TM-X-70873, X-690-75-89
Subm-Submitted for Publication.

Descriptors: *Magnetosphere, *Mathematical models, *Mercury (Planet), Least squares method, Magnetic fields, Solar wind.

For abstract, see STAR 1313

N75-22230/7GA PC$3.25/MF$2.25
National Aeronautics and Space Administration. Goddard Space Flight Center, Greenbelt, Md.
Magnetic Field of Mercury Confirmed.
N. F. Ness, K. W. Behannon, R. P. Lepping, and Y. C. Whang. Apr 75, 12p NASA-TM-X-70872, X-690-75-88
Subm-Submitted for Publication.

Descriptors: *Deflection, *Magnetic flux, *Mercury (Planet), *Solar wind, Experimental design, Mariner space probes.

For abstract, see STAR 1313

N75-22235/6GA PC$4.25/MF$2.25
Little (Arthur D.), Inc., Cambridge, Mass.
Techniques for Carrying out Radiative Transfer Calculations for the Martian Atmospheric Dust.
Final Report, Jun. 1973 - Sep. 1974.

J. R. Aronson, A. G. Emslie, and P. F. Strong.
Sep 74, 62p NASA-CR-143693
Contract NAS5-23257

Descriptors: *Dust, *Infrared spectra, *Mariner 9 space probe, *Mars atmosphere, *Radiative transfer, Computer programs, Minerals, Spectrum analysis.

For abstract, see STAR 1313

N75-22236/4GA PC$3.25/MF$2.25
National Aeronautics and Space Administration. Goddard Space Flight Center, Greenbelt, Md.
The Jovian Electron Spectrum and Synchrotron Radiation at 375 cm.
T. J. Birmingham. Apr 75, 15p NASA-TM-X-70876, X-602-75-94

Descriptors: *Electromagnetic spectra, *Electron radiation, *Jupiter (Planet), *Synchrotron radiation, Magnetosphere, Magnetospheric electron density, Pioneer 10 space probe, Radio observation.

For abstract, see STAR 1313

N75-22237/2GA PC$7.00/MF$2.25
Massachusetts Inst. of Tech., Cambridge. Dept. of Earth and Planetary Sciences.
The Bulk Lunar Electrical Conductivity.
Ph.D. Thesis. Final Report.
D. L. Leavy. Jan 75, 200p NASA-CR-142696
Contract NGL-22-009-187

Descriptors: *Apollo 12 flight, *Electrical resistivity, *Electromagnetic fields, *Explorer 35 satellite, *Lunar magnetic fields, Field strength, Lunar surface, Magnetometers, Mathematical models, Numerical analysis, Solar wind.

For abstract, see STAR 1313

N75-22238/0GA PC$3.75/MF$2.25
National Aeronautics and Space Administration. Langley Research Center, Langley Station, Va.
A Photometric Function for Diffuse Reflection by Particulate Materials.
W. E. Meador, and W. R. Weaver. Apr 75, 39p NASA-TN-D-7903, L-10021

Descriptors: *Diffuse radiation, *Functions (Mathematics), *Particle diffusion, *Photometry, *Specular reflection, Albedo, Brightness, Light scattering, Planetary surfaces, Remote sensors, Shadows.

For abstract, see STAR 1313

N75-22242/2GA PC$3.25/MF$2.25
National Aeronautics and Space Administration. Goddard Space Flight Center, Greenbelt, Md.
The Solar Elogation Distribution of Low Frequency Radio Bursts.
M. L. Kaiser. Apr 75, 18p NASA-TM-X-70883, X-693-75-99
Subm-Submitted for Publication.

Descriptors: *Explorer 43 satellite, *Low frequencies, *Solar radio bursts, Data processing, Electron density (Concentration), Harmonics, Plasma frequencies.

For abstract, see STAR 1313

N75-22250/5GA PC$3.25/MF$2.25
National Aeronautics and Space Administration. Goddard Space Flight Center, Greenbelt, Md.
Kaon alpha X-Rays from Cosmic Ray Oxygen.
S. H. Pravdo, and E. A. Boldt. Feb 75, 24p NASA-TM-X-70870, X-661-75-39
Subm-Submitted for Publication.

Descriptors: *Cosmic rays, *Kaons, *Oxygen, Alpha particles, Interstellar space, Ions, X rays.

For abstract, see STAR 1313

3C. Celestial Mechanics

N75-22220/8GA PC$3.75/MF$2.25
National Aeronautics and Space Administration. Goddard Space Flight Center, Greenbelt, Md.
On the Oscillation of the Laterally Heterogeneous Earth, 1.
P. Musen. Jan 75, 39p NASA-TM-X-70869, X-920-75-62
Subm-Submitted for Publication.

Descriptors: *Coriolis effect, *Earth (Planet), *Oscillations, *Perturbation, Angular momentum, Differential equations, Quantum mechanics.

For abstract, see STAR 1313

4. ATMOSPHERIC SCIENCES

4A. Atmospheric Physics

AD-A010 817/5GA PC$3.75/MF$2.25
Naval Research Lab Washington D C
A Direct Mechanism for the Generation of Terrestrial Kilometric Radiation.
Interim rept.,
P. Palmadesso, T. P. Coffey, S. L. Ossakow, and K. Papadopoulos. Apr 75, 33p Rept no. NRL-MR-3035

Descriptors: *Aurorae, *Electromagnetic radiation, Ion density, Instability, Emission spectra, Ionosphere.
Identifiers: *Terrestrial radiation.

A beam driven electromagnetic instability which operates in the topside ionosphere in the presence of ion wave turbulence is suggested as a possible explanation of terrestrial kilometric radiation. Theoretical estimates of the central frequency and bandwidth of radiation produced in this way are consistent with observations. In its simplest form the instability mechanism leads to a spectrum of kilometric radiation which propagates primarily in the left-ordinary mode as it leaves the source region.

AD-A010 888/6GA PC$3.75/MF$2.25
Iowa Univ Iowa City Dept of Physics and Astronomy
Continuum Radiation from Low-Energy Electrons in the Outer Radiation Zone.
Progress rept.,
D. A. Gurnett, and L. A. Frank. Apr 75, 39p Rept no. U. of Iowa-75-19
Contract N00014-68-A-0196-0009, Grant NGL-16-001-043
Sponsored in part by Grants NGL-16-001-002 and NAS5-11431.

Descriptors: *Magnetosphere, Electromagnetic radiation, Electron flux, Magnetic disturbances, Electron density, White noise, Unmanned spacecraft.
Identifiers: HAWKEYE 1 satellite, IMP-8 satellite, *Terrestrial radiation.

A weak non-thermal continuum radiation is generated by the earth's magnetosphere in the frequency range from about 500 Hz to greater than 100 kHz. During magnetically disturbed periods the intensity of this continuum radiation increases significantly, by as much as 20 db during large distrubances. In this paper the authors present a series of observations obtained by the HAWKEYE-1 and IMP-8 spacecrafts during a period of greatly enhanced continuum radiation intensity which occurred from October 14 to October 21, 1974.

AD-A010 905/8GA PC$3.25/MF$2.25
Alaska Univ College Geophysical Inst
The Vertical Distribution of Tropospheric Aerosols at Barrow, Alaska,
Glenn E. Shaw. 9 Oct 73, 14p Rept no. UAG-Contrib-A446
Contracts N00014-71-A-0364-0001, N00014-67-A-0317-0010
Summary in Russian.
Availability: Pub. in TELLUS, v27 n1 p39-50 1975.

Descriptors: *Aerosols, *Turbidity, *Troposphere, Heat balance, Vertical orientation, Distribution, Alaska, Arctic regions, Reprints.

The vertical distribution of tropospheric aerosols near Barrow, Alaska was determined by measuring the optical atmospheric transmission in the mid-visible at different altitudes with an airborne photometer. Measurements of the vertical aerosol distribution for periods in April and July 1972, are discussed.

AD-A010 919/9GA PC$4.75/MF$2.25
Science Applications Inc La Jolla Calif
Electron Energy Degradation in the Atmosphere: Consequent Species and Energy Densities, Electron-Flux, and Radiation Spectra.
Topical rept. 7 Jan-7 Sep 74,
Benjamin F. Myers, and Melvin R. Schoonover. 3 Jan 75, 77p Rept no. SAI-74-619-LJ DNA-3513T
Contract DNA001-74-C-0149

Descriptors: *Atmospheric physics, *Ionosphere, *Electron scattering, *Electron capture, Electron energy, X rays, Beta particles, Gamma rays, Absorption(Physical), Gas ionization, Particle collisions, Electron flux, Spectra, Altitude.

A method is presented which describes the discrete energy loss undergone by electrons resulting from absorption events. The initial species, the partitioning of energy, the electron-flux spectra, and radiation band profiles resulting from energy degradation of electrons are calculated for atmospheric compositions corresponding to altitudes between 60 and 145 km and for initial electron energies of 14 to 900 eV.

N75-21854/5GA PC$9.50/MF$2.25
Eidgenossische Technische Hochschule, Zurich (Switzerland).
Regular Ozone Soundings at the Aerological Station of the Swiss Meteorological Office at Payerne, Switzerland, 1968-1972.
H. U. Duetsch. Sep 74, 335p LAPETH-10

Descriptors: *Meteorological flight, *Ozone, *Sounding, Annual variations, Atmospheric composition, Climatology, Meteorological services.

For abstract, see STAR 1313

N75-21860/2GA PC$3.25/MF$2.25
National Aeronautics and Space Administration. Goddard Space Flight Center, Greenbelt, Md.
Quantitative Models of Magnetic and Electric Fields in the Magnetosphere.
D. P. Stern. Apr 75, 19p NASA-TM-X-70875, X-602-75-90
Conf-Presented at the Tropical Conf. On Quantitative Magnetospheric Models, la Jolla, Calif., 6-8 May 1975.

Descriptors: *Electric fields, *Magnetic fields, *Magnetosphere, *Mathematical models, Atmospheric models, Geomagnetism, Geophysics, Quantitative analysis.

For abstract, see STAR 1313

N75-21862/8GA PC$7.00/MF$2.25
Colorado State Univ., Fort Collins. Dept. of Atmospheric Science.
Atlas of Radiation Budget Measurements from Satellites, 1962 - 1970.
T. H. Vonderhaar, and J. S. Ellis. Dec 74, 193p
NASA-CR-142676, PAPER-231
Contract NGR-06-002-102

Descriptors: *Atmospheric heat budget, *Maps, *Nimbus satellites, *Outer radiation belt, *Tiros satellites, Annual variations, Earth albedo, Infrared radiation, Satellite-borne photography, Solar energy, Terrestrial radiation.

For abstract, see STAR 1313

N75-22251/3GA PC$5.75/MF$2.25
Rice Univ., Houston, Tex. Dept. of Physics and Astronomy.
Observation of Low Energy Protons in the Geomagnetic Tail at Lunar Distances.
M.S. Thesis.
D. A. Hardy. Sep 74, 127p NASA-CR-141732
Contract NAS9-5911

Descriptors: *Geomagnetic tail, *Solar protons, Magnetospheric proton density, Plasma dynamics, Plasma flux measurements, Solar wind, Thermal plasmas.

For abstract, see STAR 1313

TT-74-58068 PC$4.25/MF$2.25
National Science Foundation, Washington, D.C.
Radiation Climate and Measurements (Radiatsionnyi Klimat i Izmereniya).
1975, 67p
Trans. of mono. Doklady Vsesoyuznoi Konferentsii po Ispolvzovaniyu Solnetsnoi Energii, Erevan, 17-21 June 1969, Moscow, 1969, SeksiyaC-6, (Reports of All-Union Conference on the Utilization of Solar Energy, Erevan, 17-21 June 1969) SectS-6. Sponsored in part by National Science Foundation, Washington, D.C. Special Foreign Currency Science Information Program.

Descriptors: *Solar radiation, Actinometry, Solar ultraviolet radiation, Monochromators, Luminance, Aging tests(Materials), Houses, Earth surface, Mathematical models, USSR, Translations.

Presented are papers dealing with determination of solar radiation on the Earth's surface; solar radiation effects on aging of materials; natural ultraviolet radiation in houses; standardization of the distribution of the luminance of the clear sky; and a portable monochromator for spectral measurements of the natural ultraviolet radiation.

4B. Meteorology

AD-A010 627/8GA PC$5.75/MF$2.25
Physical Dynamics Inc Detroit Mich
Atmospheric Modeling: Development of Vortex Structures in Buoyant and Shear Flows.
Final rept. 1 Aug-31 Dec 72,
J. Alex Thomson, and J. C. S. Meng. Dec 73, 143p Rept no. PD-73-034 RADC-TR-74-117
Contract F30602-72-C-0493, ARPA Order-1649

Descriptors: *Atmospheric circulation, *Atmosphere models, *Vortices, *Shear properties, Mathematical models, Finite difference theory, Flow fields, Instability, Simulation, Equations of motion, Fourier transformation, Buoyancy, Interactions, Numerical methods and procedures, Wake.
Identifiers: Fast Fourier transform, Rotating flow, Shear flow.

Particle-in-cell (PIC) calculations representing a vortex by the particles were done by Rosenhead in 1930 in his study of vortex streets by Birkoff and Fisher in 1959, and by Hama and Burke in 1960. Abernathy and Kronauer made a detailed study of the Karman vortex street in 1962 using the same method. Hockney (1962) was the first one to incorporate the advantages of the fast Fourier transform (FFT) to the PIC method in order to handle very large numbers of particles. Chorin (1973) proposed a new version of the discrete vortex method where vortices are needed only to satisfy the no-slip boundary conditions. The numerical study presented herein combines the concepts of the PIC method, Green's function, and the FFT methods.

AD-A010 647/6GA PC$8.50/MF$2.25
Dugway Proving Ground Utah
An Atmospheric Dispersion and Environmental Prediction Technique.
Final rept.,
Vell L. Runolfson, and Carl A. Bower, Jr. May 75, 251p Rept no. DPG-FR-M920A

Descriptors: *Atmospheric circulation, *Atmosphere models, *Wind, Air pollution, Computerized simulation, Computer programs, FORTRAN.
Identifiers: Atmospheric diffusion, FORTRAN 4 programming language.

An Atmospheric Dispersion and Environmental Prediction Technique in model form was developed and validated. The model was developed as a computerized aid to enable rapid objective analysis and calculation of atmospheric trajectories and streamlines on the mesoscale. Several observational weighting techniques were investigated to determine a capability to reconstruct an imposed wind field pattern from uniform and nonuniform measurements in the wind field. From this, a new technique was developed for application to wind interpolation which represented an improvement over the Thiessen polygon method. The developed model provides an adequate interpolated representation of wind fields and atmospheric trajectories in real or near-real time for interpretation of atmospheric pollution and hazard problems. The model can be programmed on small programable calculators with storage capability.

AD-A010 791/2GA PC$3.75/MF$2.25
Environmental Prediction Research Facility (Navy) Monterey Calif
Direct Solution of Elliptic Equations by Block Cyclic Reduction and Factoralization.
Technical note,
Thomas Rosmond, and Frank Faulkner. Apr 75, 39p Rept no. ENVPREDRSCHF-tech-note-20

Descriptors: *Partial differential equations, *Weather forecasting, *Numerical integration, Atmospheric motion, Matrices(Mathematics), Computations.
Identifiers: *Elliptic differential equations, Numerical weather forecasting, Poisson equation.

Poisson's and Helmholtz's equations are perhaps the most frequently occurring and important types of partial differential equations encountered in the atmospheric sciences. This paper presents a very fast, accurate technique for finding the numerical solution known as cyclic reduction and factoralization. This method has not heretofore been brought to the attention of the meteorological community at large.

AD-A010 792/0GA PC$4.25/MF$2.25
Environmental Prediction Research Facility (Navy) Monterey Calif
Monthly Mean Evaporation and Surface Winds Over the Northern Hemisphere Oceans and Their Year-to-Year Variations,
S. Larson, and T. Laevastu. Mar 75, 54p Rept no. ENVPREDRSCHF-tech paper-7-75

Descriptors: *Ocean surface, *Evaporation, *Weather forecasting, Wind velocity, Numerical analysis, Patterns, Surface temperature, Anomalies, Barometric pressure, Water vapor, Meteorological charts, Northern hemisphere, Seasonal variations.

As evaporation provides most of the feedback energy from the ocean to the atmosphere, it is imperative to know its distribution in time and space. Oceanic evaporation can only be computed with a Dalton type formula using necessary meteorological observations from voluntary observing and reporting vessels. The only parameter in this formula which can not be analyzed directly from ship observations is the water vapor pressure of the surface air. A formula for numerical computation of this parameter is given and briefly evaluated. Some monthly mean evaporation charts over the northern hemisphere are presented for selected months. The reasons for year-to-year differences and the anomalies of evaporation are briefly discussed, especially in relation to the surface wind patterns and in relation to the difference between the calculated water vapor pressure of the air and the saturation water vapor at the sea surface.

AD-A010 833/2GA PC$4.25/MF$2.25
Naval Postgraduate School Monterey Calif
A Numerical Parameterization of Wind Mixing in a Time Dependent Baroclinic Oceanic General Circulation Model.
Master's thesis,
Robert William Davies. Mar 75, 55p

Descriptors: *Marine meteorology, *Heat transfer, *Weather forecasting, Ocean surface, Circulation, Mathematical models, Heat flux, Interfaces, Mixing, Wind, Surface temperature, Anomalies, Boundary layer, Stratification, Theses, North Pacific Ocean.
Identifiers: Baroclinicity.

The study is directed toward improving an existing general circulation model (Haney, 1974) through the inclusion of time dependent surface boundary conditions and a wind mixing parameterization. Climatological atmospheric values, functions of time, provided the model the needed parameters in order to calculate solar insolation, longwave back radiation from the ocean, sensible heat exchange and latent heat exchange. The mixing parameterization involved the use of the Monin-Obukov length scale as a measure of the mixed-layer depth. The first law of thermodynamics was used to calculate the form of eddy flux above the mixed layer depth. A one-dimensional model using two different types of boundary conditions was used to test various parameters and ideas. The boundary condition similar to that used in the baroclinic model produced results through an interacting system that appeared similar to observations at Ocean Station 'N' in the North Pacific Ocean.

AD-A010 854/8GA PC$4.25/MF$2.25
Naval Postgraduate School Monterey Calif
Quantitative Evaluation of the 'Self-Development' Process in Extratropical Cyclogenesis.
Master's thesis,
Cecil Jackson Folker. Mar 75, 69p

Descriptors: *Tropical cyclones, *Atmospheric circulation, Advection, Latent heat, Heat transfer, Troposphere, Cooling, Heating, Convergence, Patterns, Mathematical models, Vortices, Theses, United States.
Identifiers: *Cyclogenesis.

The objective of this study is to assess quantitatively the process of 'self-development' in extratropical cyclogenesis. The basic approach is to determine within the framework of the quasi-geostrophic equations the contributions of thermal advection and latent heat release to

changes occurring in the intensification rate of a surface cyclone which result from modifying the field of vorticity advection. The relevant concepts and equations are applied to a major cyclone over the central United States and to a structurally simple analytic model of a cyclonic disturbance for which varying horizontal and vertical distributions of latent heat release are prescribed.

AD-A010 870/4GA PC$4.25/MF$2.25
Naval Postgraduate School Monterey Calif
The Use of Meteorological Satellites for Discerning Marine Fog.
Master's thesis,
Richard Thomas Wallace. Mar 75, 59p

Descriptors: *Fog, *North Pacific Ocean, *Meteorological satellites, Spatial distribution, Visible spectra, Infrared spectra, Radiometers, Ships, Data processing, Correlation techniques, Theses.
Identifiers: NOAA-2 satellite.

Accurate charting of marine fog distribution is made difficult because of the sparseness of transient-ship observations. The meteorological satellite offers the possibility of improving fog diagnosis by specifying areas (vice a discrete number of points) of marine fog. The study explores the feasibility of using meteorological satellite data, visual and/or infrared, as means of discerning the presence of marine fog. Transient-ship and satellite data from a summer-season period in 1973, eastern North Pacific Ocean, served as data base. A qualitative comparison is made between NOAA-2 satellite imagery and verifying marine fog, as determined from the synoptic-time ship data; qualitative guidelines for diagnosing the presence of marine fog from the visual and infrared imagery were formulated. A quantitative determination of the presence of marine fog, using visual and infrared NOAA-2 digital satellite data, is presented, from which a technique is developed for objectively diagnosing regions of marine fog.

AD-A010 874/6GA PC$4.25/MF$2.25
Naval Postgraduate School Monterey Calif
An Investigation of Wave-Type Disturbances Over the Tropical South Atlantic Ocean.
Master's thesis,
Eugenio Jose Ferreira Neiva. Mar 75, 57p

Descriptors: *Atmospheric disturbances, Troposphere, South Atlantic Ocean, Wind, Tropical regions, Spectrum analysis, Atmospheric temperature, Barometric pressure, Radiosondes, Atmospheric sounding, Time series analysis, Theses, Ascension Island, Africa, Brazil.
Identifiers: Paranaiba Airport(Brazil).

Spectral and cross-spectral analysis are used to investigate the existence and structure of wave-type disturbances in the troposphere over the equatorial South Atlantic Ocean. The data, which came from the NMC's tropical analysis, consists of wind components for five levels of the troposphere (700 to 200 mb) and comprise a period of 411 days. Also data at the stations Parnaiba Airport (3 degrees S, 42 degrees W) and Ascension Island (8 degrees S, 14 degrees W) are examined. The spectral results indicate, with 95% confidence, that there is periodicity in the time-series analysed in the frequency band 0.16-0.24 cpd (approximately 4- to 6- day periods). Cross-spectral analysis results indicate that the disturbance has a wavelength of about 6000 km, propagates westward at a rate of about 11 degrees longitude per day, has a slight NW-SE tilt and tilts backward in the vertical.

AD-A010 940/5GA PC$3.75/MF$2.25
Rand Corp Santa Monica Calif
Atmospheric Dispersion of Vaporized Liquefied Natural Gas,
F. W. Murray. Feb 75, 27p Rept no. P-5360

Descriptors: *Liquefied natural gas, *Clouds, *Atmosphere models, Dispersing, Mixing, Methane, Vapors, Diffusion, Detonations.
Identifiers: *Atmospheric diffusion, *Chemical spills.

The accidental spillage of liquefied natural gas offers a number of safety hazards, some of them associated with the atmospheric dispersion of the vaporized gas. The methods of treatment that have been used heretofore, especially Sutton's plume formulas, are discussed, and it is shown that these methods are not entirely adequate, especially for large spills. Several characteristics by which these gas clouds differ from the plumes from industrial stacks are considered. Some desirable characteristics of a more sophisticated atmospheric model are listed, and it is suggested that such a model might be developed from existing models that were prepared for different purposes.

AD-A011 029/6GA Not available NTIS
Rand Computation Center Santa Monica Calif
A RAND Computation Center Reference: Standard Atmosphere Calculations with JOSS,
Gerhard F. Schilling. Oct 74, 15p Rept no. R-1550/8
Availability: Paper copy available from RAND Corporation, 1700 Main Street, Santa Monica, Calif. 90406, PC$1.50.

Descriptors: *Computer programs, *Atmospheric density, *Atmospheric temperature, Computations, Standards, Atmosphere models.
Identifiers: *Atmospheric pressure, JOSS programming language.

This document describes a simple JOSS program that provides the values of temperature, pressure, and density of the U.S. Standard Atmosphere at any desired altitude from sea level to 700 km. It can be coupled with other JOSS programs where such values are needed as input quantities. For general use, the program permits the ready construction of model atmospheres.

AD-A011 057/7GA PC$4.25/MF$2.25
Colorado State Univ Fort Collins Dept of Atmospheric Science
Tropical Cyclone Genesis in the Western North Pacific.
Final rept.,
William M. Gray. Mar 75, 70p EPRF-TP-16-75
Contract N66314-74-M-1287

Descriptors: *Tropical cyclones, *Weather forecasting, *North Pacific Ocean, Typhoons, Vortices, Wind shear, Surface temperature, Troposphere, Statistical data, Climate, Seasonal variations.
Identifiers: *Cyclogenesis.

The paper presents climatological statistics on the location, frequency, and environmental conditions associated with seasonal tropical cyclone genesis of the western North Pacific. Data summaries are stratified into annual and monthly averages for the 28-year period of 1946-1973. The Annual Typhoon Reports of the U.S. Navy and Air Force from the Joint Typhoon Warning Center in Guam for the years 1949-1973 were used as the data source. It is observationally shown and physical reasons are given why seasonal cyclone genesis frequency is related to the product of the seasonally averaged parameters of: (1) Low level relative vorticity, (2) the Coriolis parameter, (3) inverse of the vertical shear of the horizontal wind from lower to upper troposphere, (4) an ocean thermal parameter related to the sea surface temperature and the sea surface minus 200 feet sea temperature, (5) moist stability from the surface to 500 mb, and (6) middle tropospheric relative humidity. A western North Pacific seasonal forecast potential of cyclone genesis frequency is derived.

AD-A011 096/5GA PC$4.25/MF$2.25
Naval Postgraduate School Monterey Calif
The Inclusion of Moisture in a Numerical Model of Steady State Fronts.
Technical rept. Jul 74-Mar 75,
C. J. Cornelius, Jr., D. F. Glevy, and R. T. Williams. May 75, 67p Rept no. NPS-51Wu75051

Descriptors: *Fronts(Meteorology), *Atmosphere models, Moisture, Latent heat, Mathematical models, Turbulent diffusion, Atmospheric temperature, Boundary layer, Momentum, Atmospheric precipitation, Convection(Heat transfer), Graphs, Tropopause.
Identifiers: Primative equations, *Frontogenesis.

The numerical frontogenesis model of Williams (1973) is modified to include moisture with its subsequent condensation and release of latent heating. The turbulent diffusions of momentum, heat and moisture are represented with various coefficients. The numerical solutions show realistic quasi-steady fronts forming within one to two days. These solutions are examined and compared over a range of the various coefficients, and various ranges of temperature.

COM-75-10718/5GA PC$3.75/MF$2.25
Chicago Univ., Ill. Satellite and Mesometeorology Research Project.
Cloud Motion Field of Hurricane Ginger During the Seeding Period as Determined by the METRACOM System.
Research paper,
Jaime J. Tecson, Yun-Mei Chang, and T. Theodore Fujita. Dec 73, 28p SMRP-RP-116
NOAA-75051209
Grant NOAA-04-3-022-8
Presented at the Technical Conference on Hurricanes and Tropical Meteorology (8th), Key Biscayne, Miami. 14-17 May 73.

Descriptors: *Clouds(Meteorology), *Cloud seeding, *Hurricanes, Motion, Remote sensing, Meteorological satellites, Wind velocity, Spaceborne photography.
Identifiers: Hurricane Ginger, Stormfury project, METRACOM system, ATS-3 satellite.

Cloud motion patterns of Hurricane Ginger (1971) are obtained in an attempt to find possible effects of seeding experiment during the September 25-28, 1971 period. The METRACOM system, which stands for Meteorologist Tracked and Computer Computed, is designed to compute cloud motion vectors tracked exclusively by trained meteorologists. Detailed analyses of high- and low-cloud motion, thus obtained, are presented in this paper. Changes in the intensity of the hurricane are studied in relation to low-cloud motion. Careful examination revealed that it is difficult to determine whether or not the effects of the seeding experiment showed definite changes in cloud motion.

COM-75-10719/3GA PC$3.75/MF$2.25
National Weather Service, Salt Lake City, Utah. Western Region.
Study on a Significant Precipitation Episode in the Western United States.
Technical memo.,
Ira S. Brenner. Apr 75, 45p NOAA-TM-NWS-WR-98 NOAA-75051503

Descriptors: *Precipitation(Meteorology), *Storms, Climate, Droughts, Clouds(Meteorology), Meteorological satellites,

Spaceborne photography, Meteorological charts, Vortices, Weather forecasting, California.

The synoptic study for the period 22 September to 3 October 1974 involves a case analysis of an unforeseen major precipitation episode associated with the merging of an inactive upper tropospheric perturbation that moved eastnortheastward out of the subtropics and an inactive extratropical low, moving southeastward. The amalgamation of the two systems caused a major surface storm within 24 hours. The major impact of this storm was to bring an abrupt end to the California dry season. Effects of these systems can be disastrous if they occur 'unexpectedly' during the raisin-drying season.

COM-75-10725/0GA PC$5.25/MF$2.25
Massachusetts Inst. of Tech., Cambridge. Dept. of Meteorology.
Barotropic Prediction of the Tracks of Tropical Cyclones.
Final rept.,
Frederick Sanders, John Gaertner, Robert W. Burpee, and Arthur Pike. Jan 74, 124p NOAA-75050903
Grant NOAA-04-3-022-7

Descriptors: *Tropical cyclones, *Hurricane tracking, *Meteorological data, Storm tracks, Wind(Meteorology), Mathematical models, Weather forecasting, Storms, North Atlantic Ocean, Troposphere, Mexico Gulf, North Africa, Caribbean Sea.

The research explores the hypothesis that the motion of tropical storms is physically very simple, and develops an operationally-oriented prediction model. Analysis was based on the observed wind data, and a small mesh length in the numerical model was chosen. Initial forecasts were made from careful manual analyses of the wind field over a grid area extending from the central Atlantic Ocean to the eastern Pacific, and from near the Equator to upper-middle latitudes. Topics discussed include the following: A barotropic model for operational prediction of tracks of tropical storms; Investigation of forecast errors of the Sanbar hurricane track model; The origin and structure of easterly waves in the lower troposphere of North Africa.

COM-75-10731/8GA PC$3.25/MF$2.25
Chicago Univ., Ill. Dept. of the Geophysical Sciences.
Analysis of Anvil Growth from ATS Pictures.
Research paper,
Yun-Mei Chang. Jul 74, 21p RP-122 NOAA-75051211
Grants NOAA-04-4-158-1, NSF-GA-41845
Report on Satellite and Mesometeorology Research Project.

Descriptors: *Clouds(Meteorology), *Atmospheric circulation, *Tropical regions, Remote sensing, Tornadoes, Upper atmosphere, Spaceborne photography, Meteorological satellites, Storms.
Identifiers: ATS-3 satellite.

The growth of two fast-spreading anvil clouds is studied from a sequence of ATS-III pictures on July 26, 1969. The anvil boundaries and cloud elements on the anvil edges are traced. Anvil boundaries are drawn at one-hour intervals and the cloud motion fields are thus calculated. The results are related to a moving tropical depression with a warm core anticyclone aloft. It is suggested that the tracking of anvil boundaries from satellite pictures is useful in obtaining a reliable and accurate upper-divergence field over disturbances in the tropics, and, thus, makes it possible to obtain a better comprehension of the mechanism in tropical circulations.

NTIS/PS-75/517/3GA
PC$25.00/MF$25.00
National Technical Information Service, Springfield, Va.
Precipitation Washout (A Bibliography with Abstracts).
Rept. for 1964-Jun 75,
Edward J. Lehmann. Jun 75, 78p*

Descriptors: *Precipitation(Meteorology), *Bibliographies, *Air pollution, Rainfall, Snow, Radioactive isotopes, Inorganic compounds, Sulfates, Inorganic nitrates, Sodium chloride, Dust, Organic compounds, Fallout, Natural radioactivity, Mathematical models, Isotopic labeling, Coal, Public health.
Identifiers: *Precipitation washout, Sinks(Biosphere), Path of pollutants.

The reports cited in this bibliography cover the removal of pollutants, radioactive isotopes, and dust by rain and snow. The theory, modeling, sampling, and effects of precipitation washout are presented. (Contains 73 abstracts).

N75-21713/3GA PC$3.75/MF$2.25
Kanner (Leo) Associates, Redwood City, Calif.
Relation Between Moisture Content of Sand and Critical Wind Velocity at Which Sand Grains Begin to Move.
M. Akiba. Mar 75, 33p NASA-TT-F-16189
Contract NASW-2481
Tran-Transl. Into English from Nogyo Doboku Kenkyu (Japan), V. 5, No. 2, 1933 p 157-174.

Descriptors: *Moisture content, *Sands, *Wind velocity, Equations of motion, Least squares method, Wind (Meteorology).

For abstract, see STAR 1313

N75-21714/1GA PC$3.25/MF$2.25
Scientific Translation Service, Santa Barbara, Calif.
Motion of Sand Grains by Wind.
R. Kawamura. Mar 75, 22p NASA-TT-F-16191
Contract NASW-2483
Tran-Transl. Into English from Science, V. 18, No. 11, 1948 p 500-506.

Descriptors: *Equations of motion, *Sands, *Wind (Meteorology), Turbulence effects, Wind velocity.

For abstract, see STAR 1313

N75-21855/2GA PC$4.75/MF$2.25
Control Data Corp., Minneapolis, Minn. Research Div.
A Feasibility Study for Measuring Stratospheric Turbulence Using Metrac Positioning System.
Final Report.
K. S. Gage, and W. H. Jasperson. 31 Mar 75, 91p NASA-CR-137675
Contract NAS2-8400

Descriptors: *Atmospheric turbulence, *Meteorological balloons, *Stratosphere, *Tracking (Position), Annual variations, Atmospheric diffusion, Balloon flight, Climatology, Turbulent diffusion.

For abstract, see STAR 1313

PB-242 104/8GA PC$3.75/MF$2.25
Institute for Defense Analyses, Arlington, Va.
On the Response of Hemispheric Mean Temperature to Stratospheric Dust: An Empirical Approach.
Final rept.,
Robert C. Oliver. Apr 75, 47p P-1094, IDA/HQ-75-17018 DOT/TST-75-90
Contract DOT-OS-30057

Descriptors: *Dust, *Climatic changes, *Stratosphere, Atmospheric temperature, Abnormalities, Cooling, Volcanoes, Numerical analysis, Correlation techniques, Trends.
Identifiers: DOT/4GZ/GA, DOT/5C.

The cooling effects of stratospheric dust, and corresponding response times for hemispheric mean temperature changes, are estimated using an empirical approach and a simple time-dependent formulation. The approach couples estimates of stratospheric dust injections by volcanic eruptions to an available record of mean temperature anomalies. The time period examined is 1883-1968. The effort is exploratory; nevertheless, the results strongly suggest that large volcanic eruptions do lead to short-term climatic cooling effects that, with frequent eruptions, would tend to be cumulative. The many uncertainties are noted, as are difficulties introduced by apparent underlying temperature trends. The cooling coefficients and response time found are compared to values developed elsewhere. The apparent climatic significance of stratospheric dust, and the fact that climatic changes involve integrals over time, suggest that long-term records of stratospheric dust, as well as other climate-determining parameters, should be developed and maintained.

RT/PROT-(74)27 PC$5.75/MF$2.25
Comitato Nazionale per l'Energia Nucleare, Rome (Italy).
Meteorological Measurement of the Low Levels and Its Interpretation in the Study of the Diffusivity of the Atmosphere at the Brasimone Site. Winter Season.
P. Cagnetti, S. Palmieri, and G. Simonini. Nov 74, 54p
In Italian. U.S. Sales Only.

Descriptors: Earth atmosphere, Measuring methods, Meteorology, Mixing, Seasons, Temperature gradients, Temperature measurement, Wind.

For abstract, see NSA 31 12, number 35671.

5. BEHAVIORAL AND SOCIAL SCIENCES

5A. Administration and Management

AD-A010 670/8GA PC$5.75/MF$2.25
Army Materiel Command Alexandria Va
Concept Study for the Establishment of the Harry Diamond Development Center - An AMC Electronic Development Center - An AMC Electronic Development Center.
Final rept.
27 May 75, 147p

Descriptors: *Military facilities, *Electronics laboratories, Relocation, Management planning and control, Facilities, Personnel, Personnel retention, Cost analysis.
Identifiers: *Harry Diamond Development Center, Consolidation.

This report summarizes three alternatives which have been formulated to provide the Department of the Army and the Army Materiel Command (AMC) with information for consideration in the possible establishment of an AMC development center in response to recommendations of the Army Materiel Acquisition Review Committee (AMARC). The proposed Harry Diamond Development Center (HDDC), reporting directly to Headquarters, AMC, is to be primarily concerned with electronics. It would consolidate and integrate the present Harry Diamond Laboratories (HDL); selected portions of the U.S. Army Security Agency (ASA); and the non-communications/automatic data processing research, development and

acquisition elements of the U.S. Army Electronics Command (ECOM).

AD-A010 727/6GA PC$10.50/MF$2.25
General Research Corp Mclean Va Operations Analysis Div
Optimal Allocation of Budget Dollars Among Materiel Procurement Programs: A Mathematical Programming Model for Optimum Planning Over Time. Volume I. Model Description and Use.
Final rept.,
Charles A. Allen, F. Donald Genova, Ronald G. Magee, Ronald New, and Richard M. Soland.
Jun 75, 417p Rept no. OAD-CR-97-Vol-1
Contract DAHC19-69-C-0017

Descriptors: *Military procurement, *Budgets, *Management planning and control, *Mathematical programming, Logistics planning, Linear programming, Integer programming, Computer programs, Optimization, FORTRAN.
Identifiers: Resource allocation, Goal programming, Constraints.

This report concludes a series of research studies in the area of optimal allocation of resources by means of mathematical programming techniques. The technique has several significant attributes: time-phased acquisition and deposition of resources are explicitly considered. Nonlinear non-convex constraints (and objective functions) are possible. The model has been successfully demonstrated on a major problem issue (the Materiel Procurement Priorities Review Committee, or MPPRC, deliberations in 1974) and has been turned over to an Army user group, the US Army Concepts Analysis Agency (CAA). Volume I of the report presents a development of the problem structure and special algorithmic features. It includes a user's manual for operation of the computer program for the IBM 360/370 series of computers. Volume II describes the adaptation of the model to the CAA computer, the UNIVAC 1108.

AD-A010 832/4GA PC$5.25/MF$2.25
Naval Postgraduate School Monterey Calif
A Systems Analysis Approach to Decision-making in a Non-Appropriated Fund Activity.
Master's thesis,
Stanley Frank Bloyer. Mar 75, 123p

Descriptors: *Management planning and control, *Decision making, *Systems analysis, Organizations, Optimization, Costs, Inventory control, Equipment, Maintenance management, Sites, Finance, Theses.
Identifiers: Flying clubs, Nonappropriated funds.

This thesis demonstrates the usefulness of the systems analysis approach to managerial decision making in a non-appropriated fund activity. The systems analysis methodology is employed to determine the optimum equipment inventory for a specific non-appropriated fund activity. Decision rules are also developed for minimizing equipment maintenance costs and for shifting the operational location of the activity.

AD-A010 929/8GA PC$4.75/MF$2.25
President'S Property Review Board Washington D C
New Directions in Federal Real Property Management.
Progress rept.
Jul 72, 76p

Descriptors: *Land areas, *Buildings, *Management planning and control, Natural resources, Water conservation, Legislation, Policies, Regulations.
Identifiers: Real property, *Property management, *Federal real property, Parks.

Contents:
New directions in federal real property management;
Development of the review process;
Legacy of parks program;
Modernizing federal real property management;
Measures of performance.

AD-A010 954/6GA PC$3.25/MF$2.25
Naval Health Research Center San Diego Calif
Utilization of Human Resources: Summary and Comment,
E. K. Eric Gunderson. 1975, 8p Rept no. 74-14
Presented at the NATO Conference, Lisbon (Portugal), JunJun 73.
Availability: Pub. in Measurement of Human Resources, p343-348 1975.

Descriptors: *Human resources, *Management, Education, Training, Performance(Human), Taxonomy, Organizations, Reprints.

Selected papers describing new approaches to many facets of the problem of utilizing human resources more effectively are summarized and discussed. Taxonomies of educational objectives, training procedures, and performance skills are very useful for reducing ambiguity formulating hypotheses, and generalizing research findings. Task analysis is essential for determining training needs, and work design is concerned with all important influences on man's work performance. Indices of job stress and manpower wastage should be examined systematically to determine where management interventions are most needed. Human resources accounting is proposed as a method for organizations to monitor the cost and value of their human assets. (Author)

AD-A010 961/1GA PC$3.25/MF$2.25
Rand Corp Santa Monica Calif
Interdisciplinary Policy Research in Independent Research Centers,
Walter S. Baer. Jan 75, 18p Rept no. P-5347

Descriptors: *Research management, *Management planning and control, Policies, Research facilities, Organization theory, Leadership, Social psychology, Quality control.
Identifiers: Policy research.

Interdisciplinary research is discussed with regard to policy research, not basic research in the physical or social sciences.

AD-A010 981/9GA PC$3.75/MF$2.25
Rand Corp Santa Monica Calif
Property Tax Reform: Implications and Prospects,
Laurence A. Dougharty. Jan 75, 34p Rept no. P5337

Descriptors: *Public administration, *State government, Feasibility studies, Substitutes, Inequalities, Policies, Computations.
Identifiers: *Property taxes, *Tax structures, *Reform programs, Local government, Tax burden.

This paper reviews the literature of property taxation in order to assess the implications and prospects for property tax reform. Four different types of property tax reform are considered: A change in the present system of local property taxation to a State-wide property tax; A change in the present tax on real property to a tax on only the site value; An abolition of the property tax; Adoption of a discriminatory tax policy for land use control.

NTIS/PS-75/494/5GA
PC$25.00/MF$25.00
National Technical Information Service, Springfield, Va.
Technology Assessment (A Bibliography with Abstracts).
Rept. for 1964-Jun 75,
Carolyn Shonyo. Jun 75, 193p*

Descriptors: *Technology assessment, *Bibliographies, Management planning, Policies, Technological advancement, Acceptability, Economic analysis, Research management, Evaluation.

This bibliography of Government-sponsored research cites references concerning the assessment of technology in a wide variety of fields from social to the physical sciences. (Contains 188 abstracts)

NTIS/PS-75/500/9GA
PC$25.00/MF$25.00
National Technical Information Service, Springfield, Va.
Decision Making in Management (A Bibliography with Abstracts).
Rept. for 1970-Jun 75,
David W. Grooms. Jun 75, 81p*

Descriptors: *Bibliographies, *Decision making, Risk, Uncertainty, Trees(Mathematics), Statistical analysis, Mathematical models, Substitutes, Policies.
Identifiers: Decision analysis, Alternatives.

Research on federal, state and local government decision making is presented. Included are decision making aids and evaluations of criteria used in decision making. (Contains 76 abstracts).

N75-22183/8GA PC$3.75/MF$2.25
National Aeronautics and Space Administration. Lewis Research Center, Cleveland, Ohio.
Safety Management of a Complex R and D Ground Operating System.
J. F. Connors, and R. A. Maurer. 1975, 38p
NASA-TM-X-71697, E-8301
Conf-Presented at Ann. Safety Symp. On the Eng. Aspects of Safety, Port Hueneme, Calif., 20 Feb. 1975; Sponsored by Federal Occupational Safety and Health Council of Southern Calif.

Descriptors: *Ground operational support system, *Research and development, *Safety management, Chemical propulsion, Electric propulsion, Fail-safe systems, Failure analysis, Life (Durability), Operational hazards, Simulation.

For abstract, see STAR 1313

PB-241 525/5GA PC$8.50/MF$2.25
National League of Cities, Washington, D.C. Urban Observatory Program.
The Tax Burden Implications of State and Regional Government Financing of City Government Services.
Final rept.,
Roy W. Bahl, and Walter Vogt. Feb 75, 251p*
UO-LCCM-75-003
Contract HUD-H-987
Prepared by Maxwell School of Citizenship and Public Affairs, Syracuse, N.Y. Metropolitan Studies Program.

Descriptors: *Tax structure, *Financing, *Municipal services, *Regional planning, State programs, Local government, Government policies, Mathematical prediction, Forecasting, Cost analysis, Inequalities, Problem solving, Municipalities, Comparative studies, Income distribution, Statistical data.
Identifiers: Tax burden, Case studies.

This report compiles and synthesizes the local case studies of municipal finance conducted in nine Urban Observatory cities. The research attempts to determine the policy implications of state and regional assumption of the financial

burden for city government services. The synthesis draws together the results of the individual studies into a general set of findings in order to predict the overall policy implications of shifting the financial burden for local government services.

PB-241 877/0GA PC$10.00/MF$2.25
South Dakota Univ., Vermillion.
Municipal Franchising and Regulation: An Evaluation of Policy Related Research.
Final rept.,
Calvin A. Kent, Richard Oppedahl, and Lynn Stephens. Dec 74, 364p* NSF/RA/S-74-012-A
Grant NSF-GI-39063
See also PB-240 648.

Descriptors: *Franchising services, *Municipalities, Government policies, Decision making, Local government activities, Evaluation, Regulations, Television systems, Electric utilities, Municipal services, Public utilities, Cost engineering, Refuse disposal, Solid waste management, Recommendations, Public relations, Utilization.
Identifiers: Cable television, Public ownership.

Municipal governments have been required to provide more of existing services and move into new areas of community concern. In satisfying these demands local governments have often had to decide whether to provide these services themselves as municipal operations or to franchise them in the private sector. This project surveyed the literature in the field and through the process of culling and sorting prepared detailed reviews of the valid research items. Research was evaluated on the basis of criteria for internal validity, external validity, and policy utility established in the grant. Also included is a summary essay on the current status of research on such topics as municipal ownership, level of governmental regulation, and franchise provisions.

PB-242 178/2GA PC$4.75/MF$2.25
Teknekron, Inc., Berkeley, Calif.
Background Study of Alternative Policies Which Would Promote University Financed Technical Innovation.
Final rept.,
David Fain. Dec 74. 80p* NSF/RA/R-74-062
Grant NSF-C819

Descriptors: *Technology transfer, *Universities, *Private industry, Technology innovation, Entrepreneurship, Capitalization, Feasibility, Interviews, Legislation, Endowment foundations, Investment incentives, Policies.
Identifiers: *University industry relations, Research utilization.

The report covers a study designed to improve the transfer of innovative technology from the university laboratory into the private sector of the economy through the formation of new companies, and to provide information on the feasibility of conducting an experiment on insuring university endowment funds invested in such new ventures. A review was made of the published literature, and of unpublished reports, theses, and special studies on the formation of new technology-based companies and on entrepreneurship. The study examined successful technology-based companies and some proposed new ventures, and included interviews with endowment managers and members of the financial community. The report discusses the process of establishing new technology-based companies, the requirements for start-up capital, possible sources for such funds, and legislative incentives.

PB-242 193/1GA PC$4.75/MF$2.25
American Public Works Association, Chicago, Ill.
Dynamic Technology Transfer and Utilization: The Key to Progressive Public Works Management.
Final rept.,
Morris M. Cohn, and M. J. Manning. Nov 74, 88p* APWA-1974 NSF/RA/R-74/031
Contract NSF-DI-38422

Descriptors: *Technology transfer, *Public works, Local government, Government policies, New technology, Management planning, Organizations, Public administration, Improvement, Technology development, Technology utilization, Economic needs.

This report is a follow-on to portions of an NSF-sponsored study entitled 'A Background Study of Technology Utilization n the Field of Public Works,' which pointed out areas for improvement within the processes whereby local public works agencies learn of, adapt, and use new technologies. The report summarizes these findings and serves to identify the reasoning behind them. It also proposes new roles for professional public works associations and for APWA in particular within the technology transfer processes of research, development, production, dissemination, and application. The thrust of these roles is to assure satisfactory monitoring, evaluation, and assistance to help identify and satisfy technology needs in the public works field.

PB-242 314/3GA PC$5.25/MF$2.25
Northwestern Univ., Evanston, Ill. Dept. of Industrial Engineering and Management Sciences.
Research Priorities on Technology Transfer to Developing Countries. Volume I.
Final rept.,
Albert H. Rubenstein, Theodore W. Schlie, and Alok K. Chakrabarti. Jan 74, 118p 73-61 NSF/RA/X-74-007
Grant NSF-GI-39239
See also Volume 2, PB-242 315.

Descriptors: *Technology transfer, *Developing countries, *Research projects, Workshops, Problem solving, Economic issues, Abilities, Machinery, Public works, Construction, Labor relations, Substitutes, Policies, Environmental issues, Organizational development.

The report contains the results of two NU/NSF workshops held at Northwestern University, May 1973, and Washington, D.C., September 1973, to identify important, researchable questions in the area of technology transfer to developing countries, and to set priorities among them. A list of questions was produced along with a recommended approach to doing research in the technology transfer field. Brief papers by researchers on various aspects of technology transfer and developing nations are included.

PB-242 315/0GA PC$4.25/MF$2.25
Northwestern Univ., Evanston, Ill. Dept. of Industrial Engineering and Management Sciences.
Research Priorities on Technology Transfer to Developing Countries, Volume II. Survey of Selected Studies and Research on Technology Transfer to Developing Countries,
Nancy Beach. Jul 74, 63p 74-61 NSF/RA/X-74-041
Grant NSF-GI-39239
Revision of report dated Jun 73. See also Volume 1, PB-242 314.

Descriptors: *Technology transfer, *Developing countries, *Research projects, Workshops, Reviews, Surveys, Bibliographies, Management planning, International relations, International organizations, Research management.

This literature and research survey and bibliography (260 entries) was prepared for use at two NU/NSF workshops on technology transfer to developing countries held at Northwestern University in May, 1973, and Washington, D.C., in September, 1973. It has been amended to take into account several suggestions made by workshop participants.

PB-242 329/1GA PC$4.75/MF$2.25
Connecticut Univ., Storrs. Inst. of Materials Science.
Proposal for an Experiment on Providing Incentives for Industry-University Research Collaboration.
Final rept.,
Leonid V. Azaroff. Jun 74, 85p* NSF/RA/R-74-001
Grant NSF-DI-39492

Descriptors: *Industrial relations, *Universities, *Research projects, Cooperation, Cost sharing, Incentives, Research and development, Experimentation, Barriers, Socioeconomic profiles, Polymers, Connecticut.
Identifiers: *University industry relations.

The final report describes a potential experiment in cooperative research involving a university and an industry, whereby limited government cost-sharing is used as an incentive for establishing a long term cooperative program. It describes the steps taken by the author in attempting to establish the cooperative program with industrial organizations specifically inclined to exploit plastic materials. Barriers encountered, steps taken to overcome barriers, and conditions necessary to induce industrial participation in the program are outlined. This study was one of several that led to the selection of three long term programs that comprise an experiment in cooperative research initiated by the R&D Incentives Office of the National Science Foundation.

PB-242 347/3GA PC$8.75/MF$2.25
Fairfax County Office of Research and Statistics, Va.
Real Estate Assessment/Billing System (REABS). General Design Document,
Thomas E. Deeley, and Thomas D. Sheffler. Aug 73, 278p* FXCO/ORS-75/10

Descriptors: *Real estate, *Tax collection, *Computer aided evaluation, *Management information systems, Real estate values, Real estate taxes, Billing, Revenue, Real property taxes, Local government, Virginia, Data processing.
Identifiers: Fairfax County(Virginia).

Modern real estate assessment systems use the latest information technology for records maintenance. The Real Estate Division is responsible for appraising all parcels of land and the improvements theron that exist within the County. All file maintenance is done on-line using cathode ray tube (CRT) terminals. The Division of Finance bills land owners for taxes due on each parcel and maintains records with regard to the collection of this tax revenue. The newly-designed computerized system extends the information already contained in the data base to accommodate the increased informational needs of the County and takes advantage of recent enhancements in computer technology. The General Design Document provides an overview of the approach and system operation, file descriptions, program descriptions, report descriptions, a chart of the information systems flow, and other data required to define the scope and parameters of this System.

PB-242 348/1GA PC$4.25/MF$2.25
Fairfax County Office of Research and Statistics, Va.
Analysis of Computer Assisted Appraisal of Real Property in Fairfax County.
Feasibility study,
Joel Selekof. Jun 74, 52p* FXCO/ORS-75/11

Descriptors: *Real property, *Records management, *Computer aided evaluation, *Management information systems, Local government, Property values, Appraisals, Data processing, Sales, Real estate, Virginia.
Identifiers: Fairfax County(Virginia).

Only recently has the computer been used to perform some of the routine functions of property valuation and record maintenance at the local government level. Use of the computer is especially important where the capability to provide for annual review of all properties is a desirable goal. Two possible alternatives of achieving annual property review were studied: enhance the existing system using a manual (traditional) approach, with additional appraisal and clerical staffing; enhance the existing system with a comprehensive computer assisted appraisal system. The second alternative appears desirable from both a cost and benefit standpoint. The automated approach also has the advantage of providing updated appraisal values on an annual basis.

PB-242 349/9GA PC$7.25/MF$2.25
Fairfax County Office of Research and Statistics, Va.
Real Estate Computer Assisted Appraisal System (RECAAS). General Design Document,
Thomas D. Sheffler. Jan 75, 204p* FXCO/ORS-75/12

Descriptors: *Real property, *Market value, *Computer aided evaluation, *Management information systems, Real property values, Appraisals, Regression analysis, Cost analysis, Sales, Housing characteristics, Data processing, Virginia, Local government, Revenue.
Identifiers: Fairfax County(Virginia).

Three approaches toward estimating market value are defined; multiple-regression analysis, replacement cost analysis, and sales trend analysis. Each approach provides an estimate of current market value based on recent sales data and housing characterists information. The system makes these estimates available for review so that the appraiser has final authority over all property values made on an annual basis. The General Design Document provides an overview of the approach and system operation, file descriptions, program descriptions, report descriptions, a chart of the information systems flow, and other data required to define the scope and parameter of this System.

PB-242 354/9GA PC$3.25/MF$2.25
Fairfax County Office of Research and Statistics, Va.
Productivity Program.
Final rept.
Jun 74, 21p FXCO/ORS-75/3

Descriptors: *County government, *County planning, Productivity measurement, Effectiveness, Services, Standards, Criteria, Performance evaluation, Local government, Personnel management, Budgeting, Management, Virginia.
Identifiers: Fairfax County(Virginia).

The essential function of the program is to provide the means for upper management (County Executive and Board of Supervisors) to evaluate the performance of all agencies in achieving their goals and objectives, as well as the means for middle management to evaluate the performance of its agency and personnel in carrying out routine functions geared toward achievement of goals and objectives.

5B. Documentation and Information Technology

AD-A010 877/9GA PC$4.75/MF$2.25
Naval Postgraduate School Monterey Calif
Analysis of a Workload Control Documentation.
Master's thesis,
Leslie Glenn Murray. Mar 75, 90p

Descriptors: *Aircraft, *Repair, *Records, *Maintenance, Data processing, Management, Planning, Job analysis, Operations research, Theses, California.
Identifiers: Naval Air Rework Facility.

A study of the Master Data Record system used at the Naval Air Rework Facility, North Island, California, was undertaken. Several visits were made to the facility and personnel were interviewed. An operational knowledge of the Master Data Record file mainteneance procedure was gained and several problem areas were explored. A proposed On-Line Master Data Record Project being pursued at the facility was studied and critiqued. Several alternative solutions to the problems existing in the present file maintenance system and recommendations for further study were made.

AD-A010 887/8GA PC$3.75/MF$2.25
West Virginia Univ Morgantown Dept of Sociology and Anthropology
KBDATA -- A Bank of Effective Sociometric Data Sets.
Interim rept.,
H. Russell Bernard, Peter D. Killworth, and Richard Kuznicki. 1 Jun 75, 37p Rept no. BK-109-75
Contract N00014-73-A-0417-0001
Prepared in cooperation with Cambridge Univ. (England). Dept. of Applied Mathematics and Theoretical Physics.

Descriptors: *Data banks, *Sociometrics, Information systems, Networks, Communications networks.

A listing is given of a bank of primarily effective sociometric data. These data are available for use by researchers in sociometry, network analysis, communications, and related fields. The bank is the largest known chunk of effective sociometric data extant.

AD-A011 034/6GA PC$3.75/MF$2.25
Naval Research Lab Washington D C
Principles of the CODASYL Approach to the Description of Data Structures.
Interim rept.,
Frank A. Manola. Jun 75, 29p Rept no. NRL-MR-3068

Descriptors: *Data bases, *Management planning and control, Language, Networks, Models, Information retrieval, Computers, User needs.
Identifiers: Conference on data systems languages, Data structures.

Interest in the subject of data bases and data base management systems has been growing in the past several years at a rapidly accelerating rate both on the part of computer scientists and on the part of managers and data processing personnel in user organizations. Much of this interest has been stimulated by the existence of the language specifications published in the April 1971 report of the CODASYL (Conference On Data Systems Languages) Data Base Task Group (DBTG). These specifications included two data description languages and one data manipulation language, as well as a proposed data base system architecture in which these languages would be used. The specifications were written with a certain background and a specific method of specifying data and data relationships in mind. It is the purpose of this paper to outline some of this background and some of the principles on which these language specifications were based. In particular, the paper concentrates on the underlying philosophy of describing data and its structure embodied in what has come to be known as the network model of data.

COM-75-50141-05/GA PC-GPO/MF$2.25-NTIS
National Bureau of Standards, Washington, D.C.
Dimensions/NBS. Volume 59, Number 5, May 1975.
Monthly technical news bulletin.
May 75, 25p NBS/DIM-59/5
Library of Congress Catalog Card No. 25-26527.
Paper copy available from GPO.

Descriptors: *Periodicals, *Research projects, Computers, Elections, Air pollution, Standards, Metric system, X rays, Ozone, Dental materials, Law enforcement, Surveillance, Police, Telecommunication, Water pollution.
Identifiers: Technical news bulletins.

This monthly magazine features short summaries of major technical developments, highlights of work in progress, major speeches and statements by Bureau management, and a listing of NBS publications. The table of contents for the current issue is: NBS proposes guidelines for computerized elections; New air pollution standards developed by NBS; The treaty of the Metre 1875-1975; Beyond x-rays; A look at the ozone problem; Highlights; ETIP, utility commissions and policy experiments; Instrument evaluates wear of dental filling materials; Surveillance camera guideline to help cut thefts; NBS tests 'little box' that speeds police communications; New NBS mercury standards will aid water pollution studies publications.

JPRS-64704 PC$3.75/MF$2.25
Joint Publications Research Service, Arlington, Va.
Reference Aid: Guide to the Transliteration of Moroccan Arabic Place Names.
6 May 75, 47p
Trans. from Bulletin Officiel and Al-Jaridah Al-Rasmiyah, Rabat, n3172, 15 Aug 73.

Descriptors: *Transliteration, *Arabic language, Words(Language), Morocco, Translations.

The report contains a list of Moroccan place names in Arabic and their standardized transliteration.

JPRS-64918 PC$6.25/MF$2.25
Joint Publications Research Service, Arlington, Va.
Reference Aid: Abbreviations in African Press.
4 Jun 75, 167p
Trans. from various journals.

Descriptors: *Abbreviations, *Words(Language), *Africa, Translations.
Identifiers: *Acronyms.

The report consists of a selective list of abbreviations commonly found in the African press.

NTIS/PS-75/513/2GA PC$25.00/MF$25.00
National Technical Information Service, Springfield, Va.
On-Line Information Retrieval Systems (A Bibliography with Abstracts).
Rept. for 1964-May 75,
Mary E. Young. Jun 75, 151p*

burden for city government services. The synthesis draws together the results of the individual studies into a general set of findings in order to predict the overall policy implications of shifting the financial burden for local government services.

PB-241 877/0GA PC$10.00/MF$2.25
South Dakota Univ., Vermillion.
Municipal Franchising and Regulation: An Evaluation of Policy Related Research.
Final rept.,
Calvin A. Kent, Richard Oppedahl, and Lynn Stephens. Dec 74, 364p* NSF/RA/S-74-012-A
Grant NSF-GI-39063
See also PB-240 648.

Descriptors: *Franchising services, *Municipalities, Government policies, Decision making, Local government activities, Evaluation, Regulations, Television systems, Electric utilities, Municipal services, Public utilities, Cost engineering, Refuse disposal, Solid waste management, Recommendations, Public relations, Utilization.
Identifiers: Cable television, Public ownership.

Municipal governments have been required to provide more of existing services and move into new areas of community concern. In satisfying these demands local governments have often had to decide whether to provide these services themselves as municipal operations or to franchise them in the private sector. This project surveyed the literature in the field and through the process of culling and sorting prepared detailed reviews of the valid research items. Research was evaluated on the basis of criteria for internal validity, external validity, and policy utility established in the grant. Also included is a summary essay on the current status of research on such topics as municipal ownership, level of governmental regulation, and franchise provisions.

PB-242 178/2GA PC$4.75/MF$2.25
Teknekron, Inc., Berkeley, Calif.
Background Study of Alternative Policies Which Would Promote University Financed Technical Innovation.
Final rept.,
David Fain. Dec 74. 80p* NSF/RA/R-74-062
Grant NSF-C819

Descriptors: *Technology transfer, *Universities, *Private industry, Technology innovation, Entrepreneurship, Capitalization, Feasibility, Interviews, Legislation, Endowment foundations, Investment incentives, Policies.
Identifiers: *University industry relations, Research utilization.

The report covers a study designed to improve the transfer of innovative technology from the university laboratory into the private sector of the economy through the formation of new companies, and to provide information on the feasibility of conducting an experiment on insuring university endowment funds invested in such new ventures. A review was made of the published literature, and of unpublished reports, theses, and special studies on the formation of new technology-based companies and on entrepreneurship. The study examined successful technology-based companies and some proposed new ventures, and included interviews with endowment managers and members of the financial community. The report discusses the process of establishing new technology-based companies, the requirements for start-up capital, possible sources for such funds, and legislative incentives.

PB-242 193/1GA PC$4.75/MF$2.25
American Public Works Association, Chicago, Ill.
Dynamic Technology Transfer and Utilization: The Key to Progressive Public Works Management.
Final rept.,
Morris M. Cohn, and M. J. Manning. Nov 74, 88p* APWA-1974 NSF/RA/R-74/031
Contract NSF-DI-38422

Descriptors: *Technology transfer, *Public works, Local government, Government policies, New technology, Management planning, Organizations, Public administration, Improvement, Technology development, Technology utilization, Economic needs.

This report is a follow-on to portions of an NSF-sponsored study entitled 'A Background Study of Technology Utilization n the Field of Public Works,' which pointed out areas for improvement within the processes whereby local public works agencies learn of, adapt, and use new technologies. The report summarizes these findings and serves to identify the reasoning behind them. It also proposes new roles for professional public works associations and for APWA in particular within the technology transfer processes of research, development, production, dissemination, and application. The thrust of these roles is to assure satisfactory monitoring, evaluation, and assistance to help identify and satisfy technology needs in the public works field.

PB-242 314/3GA PC$5.25/MF$2.25
Northwestern Univ., Evanston, Ill. Dept. of Industrial Engineering and Management Sciences.
Research Priorities on Technology Transfer to Developing Countries. Volume I.
Final rept.,
Albert H. Rubenstein, Theodore W. Schlie, and Alok K. Chakrabarti. Jan 74, 118p 73-61
NSF/RA/X-74-007
Grant NSF-GI-39239
See also Volume 2, PB-242 315.

Descriptors: *Technology transfer, *Developing countries, *Research projects, Workshops, Problem solving, Economic issues, Abilities, Machinery, Public works, Construction, Labor relations, Substitutes, Policies, Environmental issues, Organizational development.

The report contains the results of two NU/NSF workshops held at Northwestern University, May 1973, and Washington, D.C., September 1973, to identify important, researchable questions in the area of technology transfer to developing countries, and to set priorities among them. A list of questions was produced along with a recommended approach to doing research in the technology transfer field. Brief papers by researchers on various aspects of technology transfer and developing nations are included.

PB-242 315/0GA PC$4.25/MF$2.25
Northwestern Univ., Evanston, Ill. Dept. of Industrial Engineering and Management Sciences.
Research Priorities on Technology Transfer to Developing Countries, Volume II. Survey of Selected Studies and Research on Technology Transfer to Developing Countries,
Nancy Beach. Jul 74, 63p 74-61 NSF/RA/X-74-041
Grant NSF-GI-39239
Revision of report dated Jun 73. See also Volume 1, PB-242 314.

Descriptors: *Technology transfer, *Developing countries, *Research projects, Workshops, Reviews, Surveys, Bibliographies, Management planning, International relations, International organizations, Research management.

This literature and research survey and bibliography (260 entries) was prepared for use at two NU/NSF workshops on technology transfer to developing countries held at Northwestern University in May, 1973, and Washington, D.C., in September, 1973. It has been amended to take into account several suggestions made by workshop participants.

PB-242 329/1GA PC$4.75/MF$2.25
Connecticut Univ., Storrs. Inst. of Materials Science.
Proposal for an Experiment on Providing Incentives for Industry-University Research Collaboration.
Final rept.,
Leonid V. Azaroff. Jun 74, 85p* NSF/RA/R-74-001
Grant NSF-DI-39492

Descriptors: *Industrial relations, *Universities, *Research projects, Cooperation, Cost sharing, Incentives, Research and development, Experimentation, Barriers, Socioeconomic profiles, Polymers, Connecticut.
Identifiers: *University industry relations.

The final report describes a potential experiment in cooperative research involving a university and an industry, whereby limited government cost-sharing is used as an incentive for establishing a long term cooperative program. It describes the steps taken by the author in attempting to establish the cooperative program with industrial organizations specifically inclined to exploit plastic materials. Barriers encountered, steps taken to overcome barriers, and conditions necessary to induce industrial participation in the program are outlined. This study was one of several that led to the selection of three long term programs that comprise an experiment in cooperative research initiated by the R&D Incentives Office of the National Science Foundation.

PB-242 347/3GA PC$8.75/MF$2.25
Fairfax County Office of Research and Statistics, Va.
Real Estate Assessment/Billing System (REABS). General Design Document,
Thomas E. Deeley, and Thomas D. Sheffler. Aug 73, 278p* FXCO/ORS-75/10

Descriptors: *Real estate, *Tax collection, *Computer aided evaluation, *Management information systems, Real estate values, Real estate taxes, Billing, Revenue, Real property taxes, Local government, Virginia, Data processing.
Identifiers: Fairfax County(Virginia).

Modern real estate assessment systems use the latest information technology for records maintenance. The Real Estate Division is responsible for appraising all parcels of land and the improvements theron that exist within the County. All file maintenance is done on-line using cathode ray tube (CRT) terminals. The Division of Finance bills land owners for taxes due on each parcel and maintains records with regard to the collection of this tax revenue. The newly-designed computerized system extends the information already contained in the data base to accommodate the increased informational needs of the County and takes advantage of recent enhancements in computer technology. The General Design Document provides an overview of the approach and system operation, file descriptions, program descriptions, report descriptions, a chart of the information systems flow, and other data required to define the scope and parameters of this System.

PB-242 348/1GA PC$4.25/MF$2.25
Fairfax County Office of Research and Statistics, Va.
Analysis of Computer Assisted Appraisal of Real Property in Fairfax County.
Feasibility study,
Joel Selekof. Jun 74, 52p* FXCO/ORS-75/11

Descriptors: *Real property, *Records management, *Computer aided evaluation, *Management information systems, Local government, Property values, Appraisals, Data processing, Sales, Real estate, Virginia.
Identifiers: Fairfax County(Virginia).

Only recently has the computer been used to perform some of the routine functions of property valuation and record maintenance at the local government level. Use of the computer is especially important where the capability to provide for annual review of all properties is a desirable goal. Two possible alternatives of achieving annual property review were studied: enhance the existing system using a manual (traditional) approach, with additional appraisal and clerical staffing; enhance the existing system with a comprehensive computer assisted appraisal system. The second alternative appears desirable from both a cost and benefit standpoint. The automated approach also has the advantage of providing updated appraisal values on an annual basis.

PB-242 349/9GA PC$7.25/MF$2.25
Fairfax County Office of Research and Statistics, Va.
Real Estate Computer Assisted Appraisal System (RECAAS). General Design Document,
Thomas D. Sheffler. Jan 75, 204p* FXCO/ORS-75/12

Descriptors: *Real property, *Market value, *Computer aided evaluation, *Management information systems, Real property values, Appraisals, Regression analysis, Cost analysis, Sales, Housing characteristics, Data processing, Virginia, Local government, Revenue.
Identifiers: Fairfax County(Virginia).

Three approaches toward estimating market value are defined; multiple-regression analysis, replacement cost analysis, and sales trend analysis. Each approach provides an estimate of current market value based on recent sales data and housing characterists information. The system makes these estimates available for review so that the appraiser has final authority over all property values made on an annual basis. The General Design Document provides an overview of the approach and system operation, file descriptions, program descriptions, report descriptions, a chart of the information systems flow, and other data required to define the scope and parameter of this System.

PB-242 354/9GA PC$3.25/MF$2.25
Fairfax County Office of Research and Statistics, Va.
Productivity Program.
Final rept.
Jun 74, 21p FXCO/ORS-75/3

Descriptors: *County government, *County planning, Productivity measurement, Effectiveness, Services, Standards, Criteria, Performance evaluation, Local government, Personnel management, Budgeting, Management, Virginia.
Identifiers: Fairfax County(Virginia).

The essential function of the program is to provide the means for upper management (County Executive and Board of Supervisors) to evaluate the performance of all agencies in achieving their goals and objectives, as well as the means for middle management to evaluate the performance of its agency and personnel in carrying out routine functions geared toward achievement of goals and objectives.

5B. Documentation and Information Technology

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Naval Postgraduate School Monterey Calif
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Identifiers: Naval Air Rework Facility.

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H. Russell Bernard, Peter D. Killworth, and Richard Kuznicki. 1 Jun 75, 37p Rept no. BK-109-75
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AD-A011 034/6GA PC$3.75/MF$2.25
Naval Research Lab Washington D C
Principles of the CODASYL Approach to the Description of Data Structures.
Interim rept.,
Frank A. Manola. Jun 75, 29p Rept no. NRL-MR-3068

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Identifiers: Conference on data systems languages, Data structures.

Interest in the subject of data bases and data base management systems has been growing in the past several years at a rapidly accelerating rate both on the part of computer scientists and on the part of managers and data processing personnel in user organizations. Much of this interest has been stimulated by the existence of the language specifications published in the April 1971 report of the CODASYL (Conference On Data Systems Languages) Data Base Task Group (DBTG). These specifications included two data description languages and one data manipulation language, as well as a proposed data base system architecture in which these languages would be used. The specifications were written with a certain background and a specific method of specifying data and data relationships in mind. It is the purpose of this paper to outline some of this background and some of the principles on which these language specifications were based. In particular, the paper concentrates on the underlying philosophy of describing data and its structure embodied in what has come to be known as the network model of data.

COM-75-50141-05/GA
PC-GPO/MF$2.25-NTIS
National Bureau of Standards, Washington, D.C.
Dimensions/NBS. Volume 59, Number 5, May 1975.
Monthly technical news bulletin.
May 75, 25p NBS/DIM-59/5
Library of Congress Catalog Card No. 25-26527.
Paper copy available from GPO.

Descriptors: *Periodicals, *Research projects, Computers, Elections, Air pollution, Standards, Metric system, X rays, Ozone, Dental materials, Law enforcement, Surveillance, Police, Telecommunication, Water pollution.
Identifiers: Technical news bulletins.

This monthly magazine features short summaries of major technical developments, highlights of work in progress, major speeches and statements by Bureau management, and a listing of NBS publications. The table of contents for the current issue is: NBS proposes guidelines for computerized elections; New air pollution standards developed by NBS; The treaty of the Metre 1875-1975; Beyond x-rays; A look at the ozone problem; Highlights; ETIP, utility commissions and policy experiments; Instrument evaluates wear of dental filling materials; Surveillance camera guideline to help cut thefts; NBS tests 'little box' that speeds police communications; New NBS mercury standards will aid water pollution studies publications.

JPRS-64704 PC$3.75/MF$2.25
Joint Publications Research Service, Arlington, Va.
Reference Aid: Guide to the Transliteration of Moroccan Arabic Place Names.
6 May 75, 47p
Trans. from Bulletin Officiel and Al-Jaridah Al-Rasmiyah, Rabat, n3172, 15 Aug 73.

Descriptors: *Transliteration, *Arabic language, Words(Language), Morocco, Translations.

The report contains a list of Moroccan place names in Arabic and their standardized transliteration.

JPRS-64918 PC$6.25/MF$2.25
Joint Publications Research Service, Arlington, Va.
Reference Aid: Abbreviations in African Press.
4 Jun 75, 167p
Trans. from various journals.

Descriptors: *Abbreviations, *Words(Language), *Africa, Translations.
Identifiers: *Acronyms.

The report consists of a selective list of abbreviations commonly found in the African press.

NTIS/PS-75/513/2GA
PC$25.00/MF$25.00
National Technical Information Service, Springfield, Va.
On-Line Information Retrieval Systems (A Bibliography with Abstracts).
Rept. for 1964-May 75,
Mary E. Young. Jun 75, 151p*

Descriptors: *Information retrieval, *Bibliographies, Information system, Networks, Documentation, Man machine systems, Data storage systems, Computer programming.
Identifiers: *On line information retrieval, Man computer interfaces.

On-line computer systems for retrieval of information are described in the reports abstracted in the bibliography. Included are systems development, formats of large and small systems, instructions for use, and comparisons of operating networks. (Contains 146 abstracts).

N75-22196/0GA PC$3.25/MF$2.25
Defence Scientific Information Service, Ottawa (Ontario).
Defence Applications of Recent Developments in Information Science and Technology.
A. C. Jones. Mar 75, 17p DSIS-TN-75-2
Conf-Presented at 25TH Symp. Of the Defence Res. Board, Ottawa, 14 Nov. 1973.

Descriptors: *Computer techniques, *Data storage, *Information systems, *Information theory, *Military technology, Artificial intelligence, Computer assisted instruction, Computer programs, Computer systems programs, Programmed instruction, Technology assessment.

For abstract, see STAR 1313

PB-242 259/0GA PC$7.00/MF$2.25
Toronto Univ. (Ontario). Dept. of Industrial Engineering.
Scientific Publications Systems: An Analysis of Past, Present and Future Methods of Scientific Communication.
Final rept.,
J. W. Senders, C. M. B. Anderson, and C. D. Hecht. Jun 75, 199p*
Grant NSF-SIS74-12627

Descriptors: *Periodicals, *Publishing, Telecommunication, Cost analysis, Scientific societies, Information retrieval, Microfilm, Computers, Data processing, Data storage, Editing, Comparison, Canada.

Part 1 discusses the present characteristics of scientific publication in terms of the problems of cost and quantity, and concludes that there are no remedies currently being tested which will satisfactorily alleviate these problems. Part 2 reviews the state of the art for electronic and computer technology, laying the groundwork for the discussion (in part 3) of the electronic journal. This concept is examined in some detail, and preliminary design for a computer and telecommunications network are discussed. Estimates of the costs of paper and electronic publication indicate that electronic publication will be cheaper to produce after 1978, and that the total costs of electronic publication will cross below those of paper publication by 1996.

PB-242 318/4GA PC$5.25/MF$2.25
National Science Foundation, Washington, D.C. Office of Science Information Service.
Federal Scientific and Technical Communication Activities: 1974 Progress Report.
Annual rept. Jan-Dec 74.
Jun 75, 103p* NSF/SIS-75-1

Descriptors: *Information centers, Information systems, Libraries, Management information systems, Telecommunications, National government, Services.

The report presents highlights of 1974 activities of over 50 Federal scientific and technical information programs in 13 major departments and independent agencies, the Smithsonian Science Information Exchange, the Government Printing Office and the Library of Congress. Each program prepared its own description. The Office of Science Information Service, National Science Foundation, compiled the resulting descriptions and prepared a list of acronyms and abbreviations, and an index.

PB-242 484/4GA PC$4.25/MF$2.25
British Library Lending Div., Boston Spa (England).
Index of Conference Proceedings Received, March 1975.
Mar 75, 74p ICP-90, ISSN-0305-5183

Descriptors: *Meetings, *Indexes(Documentation), Acoustics, Agriculture, Aeronautics, Medicine, Biology, Chemistry, Psychology, Engineering, Environmental issues, Transportation, Management, Sociology, Urban development.

The index lists conference proceedings in the fields of the natural sciences, the technologies, the social sciences and the humanities. All types of conference proceedings are covered, including those which appear in serial form, those reporting individual conferences and published as books and those published as parts of normal serials. Use of the index is by subject keywords taken from the title of the conference proceedings.

PB-242 486/9GA PC$4.75/MF$2.25
British Library Lending Div., Boston Spa (England).
BLLD Announcement Bulletin. A Guide to British Reports, Translations and Theses. March 1975.
Mar 75, 78p BAB-75-3
See also PB-238 874 and PB-240 412.

Descriptors: *Research, *Great Britain, Technical reports, Translations, Theses, Universities, Industries, Government.
Identifiers: Announcement bulletins.

The bulletin lists British report literature and translations produced by British government organizations, industry, universities and learned institutions, as well as some doctoral theses accepted at British universities during and after 1970. All items listed are held by the BLLD. It is hoped that the Bulletin will promote the wider use of British reports, translations and doctoral theses which are not normally published.

PB-242 508/0GA PC$13.00/MF$2.25
Massachusetts General Hospital, Boston. Lab. of Computer Science.
Automation of Scheduling and File Room Functions of a Diagnostic Radiology Department. Volume II,
Carl B. Lazarus, James W. Poitras, William P. Mitchell, R. Helene Knowlton, and Mary E. Kaley. Jun 75, 573p DHEW/FDA-75-8021
Contract FDA-72-71
See also Volume 1, PB-241 975.

Descriptors: *Radiology, *Diagnosis, *Information systems, Hospitals, Scheduling, Data processing, Document storage, Medical records, Automation, Computer programming, Evaluation, Instructions, Manuals.
Identifiers: Health care facilities, *MUMPS(Massachusetts General Hospital utility multipurpose programming system), Massachusetts General Hospital utility multipurpose programming system, Biomedical information systems.

Volume II represents the technical documentation related to the radiology scheduling and file room automation system which was successfully demonstrated at the Massachusetts General Hospital. The second volume is directed towards those who intend to implement the system, including program listings and file structures, instructions for using the radiology scheduling module, and user's manuals for the file room and registration modules.

PB-242 516/3GA PC$5.25/MF$2.25
British Library Lending Div., Boston Spa (England).
BLLD Announcement Bulletin. A Guide to British Reports, Translations and Theses, May 1975.
May 75, 114p BAB-75-5
See also PB-240 412.

Descriptors: *Research, *Great Britain, Technical reports, Translations, Theses, Universities, Industries, Government.
Identifiers: Announcement bulletins.

The bulletin lists British report literature and translations produced by British government organizations, industry, universities and learned institutions, as well as some doctoral theses accepted at British universities during and after 1970. All items listed are held by the BLLD. It is hoped that the Bulletin will promote the wider use of British reports, translations and doctoral theses which are not normally published.

TT-75-54022 PC$3.75/MF$2.25
National Science Foundation, Washington, D.C.
Selected Problems of Scientific, Technical and Economic Information in France,
E. Malinowska. 1975, 36p
Trans. of mono. Wybrane Zagadnienia Informacyi Naukowei, Technicznei i Ekonomicznei we Franci, n.p., n.d. Sponsored in part by National Science Foundation, Washington, D.C. Special Foreign Currency Science Information Program.

Descriptors: *Information systems, *France, Scientific research, Information retrieval, Data processing, Computers, Thesauri, Microfilm, Translations, Poland.

The report describes the organization of scientific technical, and economic information in France. The National Office for Scientific and Technical Information acts as coordinator for a network of centers that collect process, and disseminate information in various fields.

5C. Economics

AD-A010 624/5GA PC$7.50/MF$2.25
Stanford Research Inst Menlo Park Calif
Strategic Resources and National Security: An Initial Assessment.
Final technical rept. Mar-Dec 75,
Evan E. Hughes, Sanford Baum, Evan Just, Mark D. Levine, and Steve W. Woodcock. Apr 75, 247p Rept no. SRI-EGU-3258 RADC-TR-75-54
Contract F30602-74-C-0164, ARPA Order-2628

Descriptors: *Economics, *Minerals, *National defense, Natural resources, Iron, Metals, Consumption, Production, Economic models, Stockpiles, Department of Defense.
Identifiers: Input output models, Economic sectors, *Raw materials, *Materials shortages.

Data on 74 nonenergy mineral resources are compiled in a standardized format to facilitate a survey of the use of materials by the U.S. Department of Defense (DOD) from the perspective of resource availability. U.S. Bureau of Mines data on the supply and demand for materials within the U.S. economy are combined with DOD spending data from the U.S. General Services Administration in a calculation of the total use of materials by DOD for the years 1963 through 1972. An input-output

matrix of the U.S. economy specifying 399 economic sectors is employed to obtain the estimates to total use of 65 of the materials by DOD. The data summarized in the report form the basis for an analysis of the likelihood of future materials' supply shortages and the sensitivity of national security to critical shortages of materials.

AD-A010 788/8GA PC$5.75/MF$2.25
Adjutant General Center Washington D C
Personal Commercial Affairs Study. Volume I.
Final rept. 1 Jan-30 Jun 74,
William J. Edwards. 4 Oct 74, 139p Rept no. ASPO-2-74-3-Vol-1
See also Volume 2, AD-A010 789.

Descriptors: *Finance, *Consumers, *Army personnel, Purchasing, Banking, Counseling, Budgets, Management.

The purpose of the study was twofold; first, to collect and analyze a personal commercial affairs profile of the Army community to determine the feasibility of establishing an Army-wide program; secondly, if the results so indicated, develop a model program, including implementing procedures, to meet this need. The study recommended a revision of AR 608-1, Army Community Service Program, to incorporate personal commercial affairs assistance as basic services which should be provided by ACS centers. Supplemental commercial affairs materials and lesson plans on consumer services and financial indebtedness are provided in DA Pam 608-3, Your Consumer Aifairs Handbook, and DA Pam 608-6, Financial Crossroads.

AD-A010 789/6GA PC$5.25/MF$2.25
Adjutant General Center Washington D C
Personal Commercial Affairs Study. Volume II.
Final rept. 1 Jan-30 Jun 74,
William J. Edwards. 4 Oct 74, 111p Rept no. ASPO-2-74-3-Vol-2
See also Volume 1, AD-A010 788 and Volume 3, AD-A010 790.

Descriptors: *Finance, *Consumers, *Army personnel, Purchasing, Banking, Counseling, Budgets, Management, Military dependents, Military facilities, Money.

The report discusses elements of the Commercial Affairs Office, and services provided by the Commercial Affairs Office.

AD-A010 790/4GA PC$6.25/MF$2.25
Adjutant General Center Washington D C
Personal Commercial Affairs Study. Volume III.
Final rept. 1 Jan-30 Jun 74,
William J. Edwards. 4 Oct 74, 151p Rept no. ASPO-2-74-3-Vol-3
See also Volume 2, AD-A010 789.

Descriptors: *Finance, *Consumers, *Army personnel, Purchasing, Banking, Counseling, Budgets, Management, Money, Military dependents, Military facilities.

Contents:
Army community service program;
Consumer Affairs Handbook;
Financial crossroads;
Commercial Affairs Information plan.

AD-A010 873/8GA PC-GPO/MF$2.25-NTIS
American Univ Washington D C Foreign Area Studies
Area Handbook for Indonesia,
Nena Vreeland, Peter Just, Kenneth W. Martindale, Philip W. Moeller, and Rinn-Sup Shinn. May 74, 488p DA-PAM-550-39
Supersedes report dated Mar 70, AD-709 330.
Availability: Paper copy available from GPO.

Descriptors: *Indonesia, *Handbooks, Economics, Sociology, Political science, Transportation, Communication and radio systems.
Identifiers: *Area studies.

The volume is one of a series of handbooks prepared by Foreign Area Studies (FAS) of The American University, designed to be useful to military and other personnel who need a convenient compilation of basic facts about the social, economic, political, and military institutions and practices of various countries. The emphasis is on objective description of the nation's present society and the kinds of possible or probable changes that might be expected in the future.

AD-A010 914/0GA PC$5.25/MF$2.25
Center for Naval Analyses Arlington Va Naval Warfare Analysis Group
The Economic Impact of an Interruption in United States Petroleum Imports: 1975-2000,
Randall G. Holcombe. Nov 74, 111p Rept no. NWAG-Research-Contrib-245
Contract N00014-68-A-0091

Descriptors: *International trade, *Economics, Fuel consumption, Oils, Forecasting, Sources.
Identifiers: *Petroleum, *Imports, *Embargos, *Fuel shortages, Economic impacts.

The objective of this paper is to estimate the economic impact of a possible interruption in petroleum imports during the period from 1975 to the year 2000. It begins by incorporating the data of the recent oil embargo into an input-output model of the U.S. economy, in order to assess the economic impact of the interruption in imports. The model will be used as a framework for estimating the impact of all sizes of oil import interruptions, from small interruptions to a complete cutoff of imports. Several different scenarios of petroleum supply and demand are developed; indicating the uncertainties in our energy future, but also reflecting the fact that there are many policy options that can be chosen in order to encourage -- and discourage -- self-sufficiency in energy.

AD-A010 934/5GA PC$3.75/MF$2.25
Rand Corp Santa Monica Calif
Human Capital Theory: Education, Discrimination, and Lifecycles,
Finis Welch. Jan 75, 26p Rept no. P-5351

Descriptors: *Human resources, *Economic models, Theory, Skills, Statistical distributions, Ethnic groups, Inequalities, Money, Regression analysis, Performance(Human), Analysis of variance, Pattern recognition.
Identifiers: Income distribution, Earnings, Income schooling relations, Abilities.

Three topics are discussed which do not represent a comprehensive view, but are each part of the overall question of income distributions and have each absorbed the attention of those working with human capital theory. the topics are: (1) Wealth distributions and lifecycle earnings profiles; (2) sources of income returns to schooling; and, (3) race differences in income.

AD-A010 970/2GA PC$6.25/MF$2.25
Rand Corp Santa Monica Calif
The Economics of Recreation: A Survey,
Roger J. Vaughan. Sep 74, 167p Rept no. P-5301

Descriptors: *Recreation, *Economic models, Urban planning, Economics, Public relations, Facilities, Value, Benefits, Costs, Land use, Information processing.
Identifiers: Open space studies, Benefit cost analysis, Parks.

The report is intended primarily as a discussion of the appropriate way to measure the benefits of recreational open space. Topics discussed include the following: Public responsibility for urban recreation; Placing a value on recreational facilities; Predicting facility use; The estimation of the demand for recreation; The use of land values to value recreation sites; A synthesis: cost-benefit analysis of an urban park.

AD-A011 115/3GA PC-GPO/MF$2.25-NTIS
American Univ Washington D C Foreign Area Studies
Area Handbook for Southern Rhodesia. First Edition,
Harold D. Nelson, Margarita Dobert, Gordon C. McDonald , James McLaughlin, and Barbara Marvin. 1975, 397p DA-PAM-550-171
Availability: Paper copy available from GPO.

Descriptors: *Rhodesia, *Handbooks, Economics, Political science, Sociology, Transportation, Communication and radio systems.
Identifiers: *Area studies.

The volume is one of a series of handbooks prepared by Foreign Area Studies (FAS) of the American University designed to be useful to military and other personnel who need a convenient compilation of basic facts about the social, economic, political, and military institutions and practices of various countries. The emphasis is on objective description of the nation's present society and the kinds of possible or probable changes that might be expected in the future.

COM-75-10694/8GA PC$8.75/MF$2.25
Bureau of Economic Analysis, Washington, D.C.
U.S. Direct Investment Abroad, 1966, Final Data.
Final rept. 1966,
Patricia C. Walker. Jun 75, 298p BEA-SUP-75-01
A supplement to the Survey of Current Business.
Paper copy also available from GPO.

Descriptors: *Direct investments, *United States, *Foreign investments, International trade, Foreign affiliates, Industries, Balance of payments, Current business reports, Business investment.

The report presents final revised data from BEA's comprehensive benchmark survey of U.S. direct investment abroad in 1966. It covers 3,400 U.S. reporters and their 23,000 foreign affiliates. It provides measures of U.S. direct investment activity for 1966, including breakdowns by industry and area for the value of the U.S. direct investment position abroad; the directly measurable balance of payments transactions between the U.S. reporter and its foreign affiliates; the share of the U.S. reporter in the earnings of its foreign affiliates; and the portion of that share reinvested in its foreign affiliates; and the foreign affiliate financial and operating data.

COM-75-50068/GA PC$0.25/copy
Bureau of International Commerce, Washington, D.C.
Foreign Economic Trends and Their Implications for the United States.
1975,147 issues
Paper copy also available from GPO on subscription.

The series of reports presents current business and economic developments in every country that offers a present or potential market for United States goods. The reports include a summary of the prospective impact on the United States economy, changing trade patterns, prospective business trends, balance of

payments, government policies, and investments. For individual country reports, order by COM-number listed below:

ET-75-007. Saudi Arabia. Semiannual rept. Feb 75, 11p, supersedes ET-74-069 **COM-75-50068-007/GA**

ET-75-008. Sultanate of Oman. Annual rept. Feb 75, 11p **COM-75-50068-008/GA**

ET-75-009. Bahrain. Annual rept. Feb 75, 8p **COM-75-50068-009/GA**

FET-75-019A. Costa Rica. Annual rept. Apr 75, 8p, supersedes ET-75-019 **COM-75-50068-019A/GA**

FET-75-031-A. Morocco. Semiannual rept. Apr 75, 8p, supersedes ET-75-031 **COM-75-50068-031A/GA**

FET-75-038. Belize. Annual rept. Apr 75, 8p **COM-75-50068-038/GA**

FET-75-039. Israel. Annual rept. May 75, 8p, supersedes ET-74-036 **COM-75-50068-039/GA**

FET-75-040. Liberia. Semiannual rept. May 75, 7p, supersedes ET-74-024 **COM-75-50068-040/GA**

FET-75-042. Burundi. Annual rept. May 75, 8p, supersedes ET-74-091 **COM-75-50068-042/GA**

FET-75-043. Central African Republic. Annual rept. May 75, 8p, supersedes ET-74-071 **COM-75-50068-043/GA**

COM-75-50120/GA PC$0.50/MF$2.25
Domestic and International Business Administration, Washington, D.C.
Overseas Business Report.
Kathleen Keim. 1975,approx. 70 issues
Paper copy also available from GPO.

The reports present basic authoritative information for exporters, importers, investors, manufacturers, researchers, and those concerned with international trade and economic conditions. For individual reports, see below:

OBR-75-23. Marketing in Israel. May 75, 21p **COM-75-50120-23/GA**

COM-75-50185-04-04/GA
(Order as COM-75-50185-04)
Oregon State Univ., Corvallis. Dept. of Anthropology.
Observed and Perceived Impacts of Distant Water Fishing: Oregon Otter Trawl Case,
Courtland L. Smith. Apr 75, 4p NOAA-75051206-4, MFR-Paper-1134
Grant NOAA-04-5-158-2
Included in Marine Fisheries Review, v37 n4 p13-15 Apr 75.

Descriptors: *Fishing grounds, *International relations, *Fisheries, *Continental shelves, Foreign policy, International trade, International law, Fishes, Coasts, Oregon.
Identifiers: Sea Grant program, Otter trawl.

Distant-water fleets appeared off the Oregon coast in 1965. Change in the growth, equity, and diversity of Oregon otter trawl landings between 1965 and 1972 indicated that the observed well-being of otter trawl fishermen did not change significantly. Fishermen, however, perceived the foreign competition as a significant threat to their industry. Various aspects to this problem requiring regional and national attention are the relation between fishermen's perceptions and observations of the local situation, the quantity of resource available, and the relative priority of fishing in policy making and consumption patterns. Changes in the international law of the sea and limited entry cannot totally solve the problems faced by local fishermen. Without accompanying social and cultural change to accompany legal and economic proposals, the net result may be very little total gain.

COM-75-50185-04-06/GA
(Order as COM-75-50185-04)
Washington Univ., Seattle. Coll. of Fisheries.
Energy Efficiency Comparison Between the Washington and Japanese Otter Trawl Fisheries of the Northwest Pacific,
Douglas J. Wiviott, and Stephen B. Mathews. Apr 75, 5p Contrib-414 NOAA-75051206-6, MFR-Paper-1136
Included in Marine Fisheries Review, v37 n4 p21-24 Apr 75.

Descriptors: *Fishing, *Fisheries, *International trade, Manpower, Output, Fishing equipment, Cost effectiveness, Fuel consumption, North Pacific Ocean, Washington(State), Japan, USSR.

The large, home-based trawlers from foreign nations (principally Japan and the USSR) that fish in the northeastern Pacific Ocean are more efficient than the smaller U.S. trawlers in terms of traditional units of efficiency, such as pounds landed per trawling hour. This report compares these two fishing operations; however, it compares the ratio of outputs of edible fishery products to inputs of manpower, materials, and fuel (all converted to energy equivalents).

JPRS-64896 PC$4.25/MF$2.25
Joint Publications Research Service, Arlington, Va.
Financing and Credit in the Machine Building Industry,
A. Ya. Stepanov. 3 Jun 75, 64p
Trans. of mono. Finansirovanie i Kreditovanie Mashinostroitelnoi Promyshlennosti, Moscow, 1974 p3-27, 41-53, 239-271.

Descriptors: *Money and credit flows, *Industries, *USSR, Financing, Banking business, Cash flow, Machinery, Translations, Economic management.

Contents:
The nature and functions of money, finance and credit under Socialism;
Capital assets of the machine building industry;
The financial plan (the balance of income and expenditures).

PB-241 748/3GA PC$10.00/MF$2.25
Urban Inst., Washington, D.C.
State Labor Market Research Study: An Econometric Analysis of the Effects of Labor Subsidies.
Final rept.,
C. Duncan MacRae, Peter M. Greenston, Dale P. Riordan, and Linda L. Royster. Dec 74, 354p*
DLMA-21-11-74-09
Grant DL-21-11-74-09

Descriptors: *Subsidy programs, *Manpower utilization, *Economic analysis, *Labor market, Econometric models, Economic forecasting, Employment, Mathematical models, Government policies, Social welfare, Human resources, Income distribution, Income taxes, Negative income tax, Simulation, Wage subsidies, Public employment.
Identifiers: Labor subsidies.

The objective of this research is to analyze the effects of labor subsidies on a state by state basis and, hence, for the nation as a whole. The method is first to translate the subsidy into a shift in the supply or demand for workers who are eligible for the subsidy and then to simulate with a model of the state labor market the effects of this shift on both eligible and ineligible workers in the state. The results of the study are an econometric model, program simulation, and theoretical analysis.

PB-241 785/5GA PC$4.25/MF$2.25
Kramer Associates, Inc., Washington, D.C.
Coal Manpower Projections, 1980.
Final rept.,
Ewan Clague. 27 Sep 74, 68p*
Contract DL-20-11-74-17

Descriptors: *Manpower requirements, *Coal mining, Economic forecasting, Productivity, Mathematical models, Specialized training, Retirement, Skilled workers, Statistical analysis, Employment, Energy sources.

Bituminous coal production of 910 million tons in 1980 was projected by the National Petroleum Council in their report on U.S. Energy Outlook, 1971-85. On that foundation this manpower study estimates the manpower which would be required to produce that volume of coal output. Productivity of labor in coal mining declined about 30 percent during 1970-73 under the impact of higher safety and health standards established by congressional legislation. On the assumption of a productivity increase of 2 percent per year from 1974 onwards, the 1980 coal output would require a work force of about 200,000 workers, about 45,000 above 1973 employment. Additional workers needed to replace those who die or retire would raise new manpower requirements to about 15,000 men a year for the remainder of the decade. The most critical requirement will be for highly skilled workers, such as mining machine operators, roof bolters, and others, who will be needed to man the increasing mechanization of coal production. There will be urgent need of training programs for young miners, both in work safety and in mining skills.

PB-242 170/9GA PC$6.25/MF$2.25
Policy Analysis, Inc., Boston, Mass.
The Economic Cost of Alcohol Abuse and Alcoholism, 1971.
Final rept.,
Ralph E. Berry, Jr., and James P. Boland. 31 Mar 74, 173p NIAAA/NCALI-75-18
Contract HSM-42-73-114

Descriptors: *Cost estimates, *Alcoholism, *Economic impacts, Statistical data, Economic surveys, Social characteristics, Factor analysis, Losses, Productivity change, Cost analysis, Motor vehicle accidents, Criminal justice, Fires, Social welfare, Costs.
Identifiers: Health care.

The economic cost of alcohol abuse and alcoholism for the year 1971 is estimated to be nearly 25.4 billion dollars. An extensive survey reflects an effort to integrate principles of economic cost estimation and quantitative data on the relationship between alcohol consumption and social behavior with adverse cost consequences. The authors identify seven major areas of potentially significant economic cost: (1) Lost production costs; (2) Motor vehicle accident costs; (3) Health care costs; (4) Alcoholism program and research costs; (5) Costs to the criminal justice system; (6) Costs due to fire; and (7) Costs to the social welfare system. It is predicted that as alcoholism research data and related knowledge are expanded, cost estimates will be further refined and probably increased.

PB-242 199/8GA PC$5.50/MF$5.50
Urban Inst., Washington, D.C.
The Market Effects of Housing Policies,
Frank de Leeuw, Sue Marshall, Larry Ozanne, Ann Schnare, and Andrew Struik. Nov 74, 81p*
URI-93000, UI-208-23
International Standard Book No. ISBN-87766-133-2.

Descriptors: *Federal assistance programs, *Housing market analysis, *Housing planning, Mathematical models, Market profiles, Urban areas, Prices, Depreciation, Maintenance, New construction, Subsidies, Income supplements, Housing studies, Policies.
Identifiers: *Housing allowances.

Housing allowances, income maintenance, and construction subsidies are simulated over a 10-year span using the housing model. The model has been calibrated according to data from six metropolitan areas that reflect considerable variety in size, minority population, region of the country, and growth rates. Both strengths and limitations are stressed so that readers may form their own judgments about the reliability of the policy findings. Examples of these findings are that a full-scale housing allowance program would significantly increase housing prices paid by participants, but that this price rise would vary considerably according to the local market conditions. Price increases facing households above income eligibility limits for an allowance, however, would be very modest under a wide range of market conditions.

PB-242 244/2GA PC$7.25/MF$2.25
Society of Mfg. Engineers, Dearborn, Mich.
Proceedings: Manufacturing Productivity Conference, Held at Washington, D.C. on 11-13 October 1972.
Final rept.,
Robert E. Willette. Dec 72, 206p NSF/RA/R-72-016, NSF/RDI-16
Grant NSF-DI-36321
Prepared in cooperation with National Bureau of Standards, Washington, D.C.

Descriptors: *Manufacturing, *Productivity, *Meetings, Barriers, Technological development, Improvement, Incentives, Workshops, Aerospace industry, Automotive industry, Machine tool industry, Electrical industry, Computer technology, Technology assessment, Technology transfer.
Identifiers: University industry relations.

The report covers the meeting of a selected forum of government, academic and industry participants who were gathered to address issues concerning manufacturing productivity and to identify barriers which inhibit technology that might improve manufacturing productivity. The result of this forum was a list of federal incentives which initially appear to have a high potential for increasing the utilization of R&D and improving manufacturing productivity. This list of incentives ranges from government loans for start-up and capital cost for new products, to anti-trust exemptions to encourage cooperative R&D venture, government subsidies for prototype hardware, and government sponsored cooperative R&D activities.

5D. History, Law, and Political Science

AD-A010 812/6GA PC$6.25/MF$2.25
Naval Postgraduate School Monterey Calif
The Kra Canal: An Analysis of a Foreign Policy Alternative for the United States Navy in the Indian Ocean.
Master's thesis,
Alan Stevens Graham. Mar 75, 155p

Descriptors: *Foreign policy, *United States government, *Thailand, *Canals, Construction, Costs, Straits, Indian Ocean, South China Sea, Naval operations, India, Southeast Asia, Theses.
Identifiers: *Kra Canal, Nixon doctrine, *Geopolitics.

Thailand's Isthmus of Kra connects the Malay Peninsula with southern Thailand and Burma. Sixty miles in width at its narrowest point, the Kra Isthmus, over time, has been proposed as a site for the location of a canal connecting the South China Sea with the Indian Ocean. The impact that a completed Kra Canal would have on U.S. Naval policy in the Indian Ocean, in support of specific national interests, was analyzed with respect to the advantages and costs that would result from U.S. participation in the construction and operation of the canal.

AD-A010 933/0GA PC$3.25/MF$2.25
Rand Corp Santa Monica Calif
Controlled Pluralism: Is Hungary the Future of Eastern Europe,
Jeffrey D. Porro. Feb 75, 20p Rept no. P-5386

Descriptors: *Political science, *Hungary, Communism, Eastern Europe, Economics.

AD-A010 934/8GA PC$3.25/MF$2.25
Rand Corp Santa Monica Calif
Goals for Citizen Involvement: Some Possibilities and Some Evidence,
Robert K. Yin. Feb 75, 16p Rept no. P-5365

Descriptors: *Urban planning, *Management planning and control, Policies, Organizations, Effectiveness, Assessment.
Identifiers: *Citizen participation, *Participative management, *Government policies, Objectives.

Five goals for citizen involvement are considered: Increase in flow of information between servers and served; Improvements in service officials' attitudes; Improvements in client attitudes; Improvements in services delivered; Increase in client control.

AD-A010 939/7GA PC$3.25/MF$2.25
Rand Corp Santa Monica Calif
Taiwan's Fate: Two Chinas But Not Forever,
Michael Pillsbury. Feb 75, 9p Rept no. P-5374

Descriptors: *Political science, *Taiwan, United States government, Foreign policy, China, Communism.

AD-A010 942/1GA PC$3.25/MF$2.25
Rand Corp Santa Monica Calif
Personal Ties and Factionalism in Peking,
Michael Pillsbury. Feb 75, 7p Rept no. P-5373

Descriptors: *Political science, *China, Government(Foreign).

AD-A010 943/9GA PC$3.25/MF$2.25
Rand Corp Santa Monica Calif
Future U.S. Security Relations in the Latin American Contexts,
David F. Ronfeldt. Jan 75, 22p Rept no. P-5342

Descriptors: *International relations, *Latin America, Government(Foreign), Foreign policy, United States government, Economics, Foreign aid.

Contents:
- New security conditions in a new Latin America;
- Internal security against violent revolutionary struggles;
- Institutional defense against foreign economic aggression and dependency;
- A return to external defense against local conflicts;
- Security assistance and local politics;
- Bases for a future U.S. security relationship.

AD-A010 966/0GA PC$3.25/MF$2.25
Rand Corp Santa Monica Calif
Legislative Issues Surrounding the Confidentiality of Health Records,
Willis H. Ware. Jan 75, 13p Rept no. P-5355

Descriptors: *Legislation, Patients, Information systems, Computers.
Identifiers: *Medical records, Biomedical information systems, *Confidential information, Computer privacy.

The report is a draft position paper that seeks to explore some of the issues surrounding the features that might be required in legislation to protect the confidentiality of health records.

AD-A010 983/5GA PC$3.25/MF$2.25
Rand Corp Santa Monica Calif
Turkish-American Relations: An Affair to Remember,
Margaret Krahenbuhl. Dec 74, 12p Rept no. P-5340

Descriptors: *International relations, *Turkey, *United States government, USSR, Foreign aid, NATO, Straits, Marine transportation, Cyprus, Greece, Europe, Economics.
Identifiers: World War 2.

The author reviews Turkish-American relationships from after World War 2 to the present.

COM-75-10702/9GA PC$4.75/MF$2.25
North Carolina Univ., Chapel Hill. School of Law.
Legal Measures Concerning Marine Pollution,
Seymour W. Wurfel. Feb 75, 85p UNC-SG-75-04 NOAA-75050801
Grant NOAA-04-3-158-40

Descriptors: *International law, *Ocean environments, *Water pollution, Water rights, Marine resources, Continental shelves, Legislation, Islands(Landforms), Law enforcement, Arctic Ocean.
Identifiers: Sea Grant program, *Law of the Sea, Ocean waste disposal.

The purpose of this UNC Sea Grant paper is to chronicle new concepts and developments in marine pollution control and progress in marine resources law. Topics discussed include the following: Pollution of the high seas--the oceans as international rivers; Artificial islands--possibilities and legal problems; Marine pollution control and man-made islands; Fourth Amendment problems in the enforcement of marine conservation laws; Intentional ocean dumping of industrial chemical waste; The quest for oil--a decisive force in the Law Of The Arctic Sea pertaining to pollution.

COM-75-10732/6GA PC$4.75/MF$2.25
North Carolina Univ., Chapel Hill. School of Law.
Some Current Sea Law Problems.
Sea Grant pub.,
Seymour W. Wurfel. Feb 75, 78p UNC-SG-75-06 NOAA-75050802
Grant NOAA-04-3-158-40

Descriptors: *International law, *Oceans, *International relations, Law enforcement, Treaties, Foreign policy, Crimes, International trade, Fisheries, Ocean environments.
Identifiers: *Law of the sea, Innocent passage, Sea Grant program.

The report, studying viable international legal solutions to global marine resources, was published after the 1974 Caracas Law of the Sea Conference and before the 1975 Geneva Conference. It examines some of the important constituent elements of the desired overall solution concerning the law of the sea, such as innocent passage; crime control on aircraft while in overseas flight; recovery rights to craft and their contents disabled in international waters; national security interests at sea; the binding nature of international law development; and the contents of the United States' Emergency Marine Fisheries Protection Act of 1974.

JPRS-64733 PC$3.75/MF$2.25
Joint Publications Research Service, Arlington, Va.
Special Report: Translations on the Law of the Sea, XVIII.
9 May 75, 29p
Trans. from various journals. See also No. 59, JPRS-64788.

Descriptors: *International law, *Oceans, Meetings, Marine resources, Mineral deposits, Crude oil, Fisheries, Japan, Bolivia, Equador, Peru, Bulgaria, Poland, Romania, Translations.
Identifiers: *Law of the Sea.

The special report contains translations from the world press and radio of articles and commentary on the Law of the Sea Conference and subject matter covered by that conference.

JPRS-64788 PC$5.75/MF$2.25
Joint Publications Research Service, Arlington, Va.
Special Report: Translations on the Law of the Sea, XVIX.
19 May 75, 143p
Trans. from various journals. See also No. 18, JPRS-64733.

Descriptors: *International law, *Oceans, Meetings, Pollution, Crude oil, Fisheries, Continental shelves, Territorial seas, Boundaries, Fishing, Ships, Translations.
Identifiers: *Law of the sea.

The special report contains translations from the world press and radio of articles and commentary on the law of the Sea Conference and subject matter covered by that conference.

PB-241 827/5GA PC$4.25/MF$2.25
Maryland Governor's Commission on Law Enforcement and the Administration of Justice.
Report on Maryland Criminal Justice Higher Education Programs.
Oct 74, 64p LEAA-MD-75-0012

Descriptors: *Law enforcement, *Specialized training, Education, Universities, Students, Recruiting, Grants, Correctional education, Maryland, Requirements, Upgrading.
Identifiers: Curriculum development.

The Governor's Commission's recommendations for the administration of criminal justice higher education in Maryland were developed by the Commission's Training and Education Committee. The recommendations cover such areas as planning for criminal justice higher education, interstate cooperation for the provision of criminal justice curricula, distribution of Federal funds for education under the Law Enforcement Education Program (LEEP), fiscal control over LEEP funds, educational attainment for criminal justice personnel, and upgrading of current educational levels for criminal justice personnel.

PB-241 895/2GA PC$4.75/MF$2.25
Quayle, Plesser, and Co., Inc., New York.
Crime and the Criminal Justice System in Maryland. An Opinion Survey.
Nov 74, 100p LEAA-MD-75-0011
Grant LEAA-74-P-424
Prepared in cooperation with Maryland Governor's Commission on Law Enforcement and the Administration of Justice.

Descriptors: *Criminology, *Public opinion, *Attitude surveys, Criminal justice, Police, Law enforcement, Correctional institutions, Questionnaires, Specialized training, Maryland.
Identifiers: Capital punishment, Marijuana.

In July, 1974, a public opinion firm surveyed a representative sample of Maryland citizens on issues related to crime and the criminal justice system. The purpose of the study was to assist the Governor's Commission in formulating overall criminal justice improvement plans for the state, getting public reaction to those plans, and evaluating the impact of those plans once they are implemented. This document is a summary of the final report submitted to the Commission by the opinion survey firm. General categories of concern are fear of crime, police/law enforcement-related issues, court-related issues, corrections-related issues, standards and training for criminal justice agencies and personnel, capital punishment, and legalization of marijuana.

PB-241 928/1GA PC$3.25/MF$2.25
National Pretrial Intervention Service Center, Washington, D.C.
Directory of Criminal Justice Diversion Programs.
Apr 75, 14p DLMA-21-21-73-32
Grant DL-21-11-73-32

Descriptors: *Criminal justice, *Project planning, *Directories, Information, State programs, Classifications, Rehabilitation, Sites, Municipal services, Selection, Placement.
Identifiers: *Diversion, Pretrial intervention.

A directory is presented of 118 pretrial intervention projects giving addresses, administering agency, participant focus, point of diversion, and current status.

PB-241 983/6GA PC$7.50/MF$2.25
Midwest Research Inst., Kansas City, Mo.
Effects of Current State Licensing, Permit and Fee Requirements on Motor Trucks Involved in Interstate Commerce.
Final rept.,
Barrie M. Hutchinson, Barry A. Sanders, and William D. Glauz. Apr 75, 249p* FHWA/RD-75-40
Contract DOT-FH-11-7989

Descriptors: *Licenses, *Trucking industry, *Interstate commerce, Taxes, State government, Trucks, Interviews, Attitudes, Operating costs, Prorating, Common carriers, Commercial transportation.
Identifiers: DOT/5K, DOT/3G.

The study examined regarding nonuniform state licensing and permit requirements on commercial interstate truckers as well as taxes and fees associated with those requirements. Over 750 truck drivers were interviewed at 10 locations across the country to determine the extent to which current license, permit, tax, and fee requirements pose a trucking industry problem. Eleven motor carriers and several officials from each of nine states were also interviewed. The following areas were studied: (1) registration, fuel, and third structure tax requirements; (2) utilities commission requirements; (3) industry procedures and activities for compliance including obtaining permits, record keeping, report filing, and enforcement activities; (4) out-of-pocket costs of trucker compliance including taxes, permit costs and bond expenses; (5) differences in costs among small, medium and large fleets of trucks; (6) differences in costs among private, exempt and regulated carriers; (7) apportionment, prorating and reciprocity; and (8) the effect of a federally administered system of taxes.

PB-242 051/1GA PC$4.75/MF$2.25
National Pretrial Intervention Service Center, Washington, D.C.
Legal Issues and Characteristics of Pretrial Intervention Programs,
Michael B. Biel. Apr 74, 77p* DLMA-21-11-73-32-03
Grant DL-21-11-73-32

Descriptors: *Criminal justice, *Social reforms, *Rehabilitation, Correctional services planning, Project planning, Requirements, Penalties.
Identifiers: Diversion, *Pretrial intervention, Correctional treatment, Legal issues, Eligibility, Hearings.

A monograph dealing with the major legal issues and considerations associated with pretrial intervention programs gives relevant case-law citations that bear on the different issues.

PB-242 052/9GA PC$3.25/MF$2.25
National Clearinghouse on Offender Employment Restrictions, Washington, D.C.
Constitutional Challenges to Employment Disability Statutes,
Robert Plotkin. Nov 74, 24p* DLMA-82-11-72-02-01
Contract DL-82-11-72-02

Descriptors: *Employment, *Barriers, *Government policies, Surveys, Court decisions, Manpower utilization, Constitutional law, Licenses, Punishment(Psychology), Statutes.
Identifiers: *Legal restraints, *Exoffender employment, Offenders, Civil rights, Disabilities.

The report deals with statutes which inhibit employment of offenders. It discusses court decisions and the legal bases which limit the power of governmental authority to impose arbitrary job restrictions.

PB-242 069/3GA PC$3.75/MF$2.25
Michigan Univ., Ann Arbor.
Diversion from the Juvenile Justice System,
Donald R. Cressey, and Robert A. McDermott.
Jan 74, 45p
Grant LEAA-NI-72-010-G
Paper copy also available from GPO as SN.2700-00241.

Descriptors: *Criminal justice, *Juvenile delinquency, Substitutes, Probation, Management methods, State government, Government policies, Courts, Evaluation, Decision making.
Identifiers: *Diversion(Juvenile justice), Alternatives.

In order to assess current juvenile court practices, the authors surveyed diversion from criminal justics procedures in an anonymous state they call Mountain View. The intake, informal probation, and diversion units at four probation departments within the state are examined and compared in turn. The report first examines definitional problems generated by the broad term 'diversion' because the distinction between official and unofficial action, both before and after adjudication, is unclear. The discussion then proceeds according to the order in which a juvenile goes through the justice system. The authors comment on the intake officers administrative duties, discretion, and role as investigator and counselor. In handling cases, Mountain View officers have several options available: counseling; warning or release; referral to special diversion units; placement on informal probation; and petition for an official hearing. School Community Officers and Youth Services Bureaus are also reviewed as they relate to diversion of juveniles.

PB-242 102/2GA PC$5.25/MF$2.25
National Clearinghouse on Offender Employment Restrictions, Washington, D.C.
Removing Offender Employment Restrictions (A Handbook on Remedial Legislation and Other Techniques for Alleviating Formal Employment Restrictions Confronting Ex-Offenders).
Jan 73, 109p DLMA-82-11-72-02-02
Contract DL-82-11-72-02

Descriptors: *Employment, *Barriers, *Government policies, Job opportunities, Problem solving, Manpower utilization, Legislation, Removal, Statutes, Court decisions, Surveys.
Identifiers: *Exoffender employment, *Civil rights, *Legal restraints.

The report contains a statement of the problem of job opportunity for former felons, and various ways in which unreasonable employment restrictions may be removed, with a proposal of model legislation to further the removal of barriers. The latter deals with the areas of expungement and sealing statutes, the arrest

records statute, reasonable relationship statutes, and the judicial determination of rights.

5E. Human Factors Engineering

AD-A010 674/0GA PC$7.00/MF$2.25
Advisory Group for Aerospace Research and Development Paris (France)
A Review of Anthropometric Data of German Air Force and United States Air Force Flying Personnel 1967-1968,
H. J. Grunhofer, and G. Kroh. Apr 75, 180p Rept no. AGARD-ograph-205
NATO furnished.

Descriptors: *Anthropometry, *Flight crews, Air Force, France, Reviews, Germany(East and West), Tables(Data), Human factors engineering, United States, Data acquisition, NATO.

The present study contains anthropometric data of GAF and USAF flying personnel. The data for USAF flying personnel were taken from measurements of 2420 subjects in 1967. The results of this measurement series, which so far have not been published, have been provided by E. Shurchill. These data represent the latest state of anthropometric surveys of American flying personnel. A comparison of anthropometric data requires that the individual dimensions be measured by the same method. To assure this, the GAF IAM team used equipment, definitions and procedures according to Hertzberg. For each body dimension the following detailed information is given: (1) The defenition, written and illustrated, of body dimension to be measured; (2) The frequency of certain ranges; (3) A breakdown of GAF and USAF data in percentile, permitting comparison; (4) Essentials on the statistics of data distribution. To facilitate further anthropometric studies the correlation matrix of GAF data has been added in the appendix. The tables contain the correlation coefficients of any anthropometric body dimension with any other listed in this study.

5G. Linguistics

AD-A010 878/7GA PC$3.25/MF$2.25
Haskins Labs Inc New Haven Conn
Speech Research and Instrumentation.
Final rept. 1 Sep 66-28 Feb 75,
Franklin S. Cooper. Jun 75, 21p
Contract N00014-67-A-0129-0001
See also report dated Feb 75, AD-A007 342.

Descriptors: *Speech, *Phonology, Speech recognition, Linguistics, Phonetics, Auditory perception, Discrimination, Word recognition, Reading, Sound pitch, Intelligibility, Language, Hearing.
Identifiers: *Speech articulation.

The final report reviews the progress made during the approximate eight-and-a-half-year life of the contract. In the early phase, the focus lay on the development of speech research instrumentation and led to the construction of digital equipment for the analysis, reproduction and synthesis of speech as well as for the processing of electromyographic data derived from muscles of the human articulatory system. Through the latter phase of the contract research efforts were drawn more exclusively toward the study of human performance with speech signals. Here the concerns were to discover whether individual differences in listeners' perceptual skills could be identified and whether our growing knowledge of the psycho-acoustic properties of speech could be exploited in an effort to improve listeners' performances on speech in noise.

5I. Personnel Selection, Training, and Evaluation

AD-A010 743/3GA PC$7.50/MF$2.25
American Council on Education Washington D C Commission on Educational Credit
Project to Study the Feasibility of Using the Army Enlisted Military Occupational Specialty Classification System as a Means of Recognizing Learning.
Final rept. Jul 74-May 75.
23 May 75, 231p
Contract MDA903-74-C-0397

Descriptors: *Army personnel, *Skills, Job training, Proficiency, Measurement, Learning, Enlisted personnel, Army training, Apprenticeship, Education.
Identifiers: Academic standards, Qualifications, Credits.

The primary purpose was to develop a system for accreditation of military MOS (Military Occupational Specialty) training and experience which are not part of the formal service school courses. The objectives were to determine experience which correlate with civilian curricula; develop procedures for evaluation of experience; develop a prototype evaluation system for all applicable MOS experience; develop an accreditation system plan.

AD-A010 825/8GA PC$3.75/MF$2.25
Office of Civilian Manpower Management (Navy) Arlington Va
Managerial Tests of Conversational Manpower Planning Models.
R. J. Niehaus, D. Sholtz, and G. L. Thompson.
Apr 75, 39p Rept no. OCMM-TR-22

Descriptors: *Manpower, Mathematical models, Recruiting, Allocations, Personnel selection, Budgets, Problem solving, Decision making, Management planning and control, Linear programming.
Identifiers: Goal programming, Computer applications.

The paper discussed the reactions of managers to interactive conversational manpower planning models. These goal programming models originally developed by Charnes, Cooper, and Niehaus are supported by a comprehensive software capability including a specialized matrix generator and conversational statement repertoire. The first test involves the use of the model by the management of a large naval laboratory. The second involves the examination of broad civilian career planning policies by headquarters officials.

AD-A010 869/6GA PC$3.25/MF$2.25
Human Resources Research Organization Alexandria Va
A Comparison of Alternative Media for Teaching Beginning Typists.
Professional paper,
Morris Showel. Nov 74, 10p Rept no. HumRRO-PP-17-74
Contract DAHC19-73-C-0004
Pub. in Jnl. of Educational Research, v67 n6 p1-7 Feb 74.

Descriptors: *Army training, *Typewriters, Education, Media, Skills, Teaching methods.

Eight different training programs involving a variety of media were evaluated in terms of their effectiveness in developing the straight copy typing skill of male military personnel who typed 10 or less words per minute on a screening test given prior to the start of training. Subjects received a maximum of 33 hours of typing practice over a 9-day period, and tests to measure progress were administered after one hour of practice and after every 3 3/4 hours of practice thereafter. The most effective programs devoted relatively little time to detailed instruction during keyboard learning and emphasized speed by forced pace during skill building.

AD-A010 935/5GA PC$3.75/MF$2.25
Rand Corp Santa Monica Calif
Defense Manpower Issues: Testimony Before the Defense Manpower Commission, January 28, 1975.
Richard V. L. Cooper. Jan 75, 28p Rept no. P-5364

Descriptors: *Manpower utilization, *Department of Defense, *Management planning and control, Forecasting, Military forces(United States), All volunteer, Enlisted personnel, Demography, Sociometrics, Statistical data, Cost analysis.

The purpose was to provide some prespective on the issues confronting manpower and defense planners in the years ahead--including an examination of the progress and prospects for the All-Volunteer Force and, more importantly to analyze the larger manpower issues confronting the Defense Department.

AD-A010 937/1GA Not available NTIS
Rand Corp Santa Monica Calif
The University of Texas Dental Branch Clinical Encounter System,
Rudy Bretz. Feb 75, 15p Rept no. P-5376
Availability: Paper copy available RAND Corp., 1700 Main St., Santa Monica, Calif. 90406. PC$1.50.

Descriptors: *Dentistry, *Education, Universities, Schools, Teaching methods, Students, Instructional materials.
Identifiers: Dental schools.

The University of Texas Dental Branch at Houston is an innovative institution by almost any standards. It was four years ago that the faculty and administration abolished conventional courses from the dental curriculum. Today, the students' progress toward the DDS degree is measured by his mastery of topics rather than courses. With this as a basis, the next step was to institute self-pacing. Experimental at first, after four years this 'self-directed program' now involves about 20 percent of the student body and may next year incorporate the entire school. Launching of the self-directed program required the preparation of an entire curriculum of self-instructional materials, a gigantic task. It was achieved in four years time without any faculty released time.

AD-A010 975/1GA PC$3.75/MF$2.25
Rand Corp Santa Monica Calif
Improving Educational Evaluation in a Political Setting,
Robert E. Klitgaard. Dec 74, 39p Rept no. P-5327

Descriptors: *Education, *Policies, *Community relations, Assessment, Systems analysis, Information, Attitudes(Psychology), Data acquisition, Factor analysis, Sociometrics, Economics, Statistical analysis.
Identifiers: Accountability, Opposition, Imperfect information, Political objectives.

Evaluations that use imperfect information run into both analytical and political problems. The paper discusses a series of theoretical and practical problems in assessing the effects of school policies with imperfect achievement data and limited controls for nonschool factors that influence scores. Some broad recommendations are listed.

AD-A010 977/7GA PC$3.25/MF$2.25
Rand Corp Santa Monica Calif

The Contribution of Demonstration Programs to Educational Policymaking.
Sue A. Haggart. Dec 74, 21p Rept no. P-5333

Descriptors: *Education, *Management information systems, Policies, Demonstrations, Cost effectiveness, Assessment, Comparison, Management planning and control.
Identifiers: Program design, Demonstration programs.

Policy analysis or program analysis has the responsibility for providing policymakers with timely information about the consequences of alternative courses of action. In elementary and secondary education, however, the policymaking effort is complicated by the organizational gap often present between the policymaker and the practitioner or user. The educational demonstration program can help bridge this gap. If analysis of the demonstration program serves as the communication link. This discussion delineates an equitable way to develop cost measures, to assess achievement measures (as one outcome) and to compare alternatives using these measures.

AD-A011 051/0GA PC$3.75/MF$2.25
Navy Personnel Research and Development Center San Diego Calif
Electronics Technician Direct Procurement Petty Officer (DPPO) Pilot Program: Phase II.
Final rept. Nov 71-May 75,
Lloyd S. Standlee, and Chester Bilinski. Jun 75, 31p Rept no. NPRDC-TR-75-37
See also report dated Mar 74 on Phase I, AD-778 029.

Descriptors: *Jobs, *Performance(Human), *Job training, Assessment, Costs, Electronics, Proficiency, Civilian personnel, Test methods, Statistical data, Technicians, Procurement, Naval Training.

The effectiveness of electronics technicians who were sent to civilian technical schools for a major part of their training was compared with the effectiveness of those who had gone through the normal progression of Class 'A' School training. The criteria of effectiveness were academic performance, job performance, and cost of training.

AD-A011 093/2GA PC$13.00/MF$2.25
Operations Research Inc Silver Spring Md
Work in the Navy -- A Description of Navy Officer and Enlisted Occupations.
Technical rept. 1 May 74-31 May 75,
Michael N. McDermott, Barbara Paramore, and W. Thomas Callahan. 6 Jun 75, 555p Rept no. ORI-TR-923
Contract N00014-74-C-0408

Descriptors: *Careers, *Personnel development, *Naval personnel, Manuals, Management information systems, Education, Specialization, Officer personnel, Enlisted personnel, Naval training, Naval planning, Personnel management, Job analysis, Recruiting.
Identifiers: All volunteer military services.

The report contains, in manual form, career guidance materials describing occupations and career development opportunities in the Navy. The materials were developed for integration into the Oregon Career Information System, a career education program using both computerized and manual information systems. The report includes: (1) A discussion of the general work of the Navy which includes a description of the special environment within which Navy occupational tasks are performed; a comparison of Navy occupations with the occupations listed in the Oregon Career Information System; and general information on Navy career development; (2) A description of each enlisted occupation or 'rating'; (3) A description of each officer category and specialty.

COM-75-10623/7GA PC$4.25/MF$2.25
Florida State Univ., Tallahassee. Dept. of Economics.
Changes in the Relative Economic Status of Nonwhite Males During the 60's. Technical Report No. 1, Volume 1,
James Gwartney, Charles Haworth, Joan Haworth, and David Rasmussen. Aug 73, 53p
EDA/OER-75-004-Vol-1
Grant EDA-OER-414-G-72-11
See also Volume 2, COM-75-10624.
Paper copy also available in set of 2 reports as COM-10622-SET, PC$8.00.

Descriptors: *Income, *Negroes, Earnings distribution, Employment, Education, Minorities, Economic surveys, Population migrations, Urban areas, Males, Females, Labor force participation.

This two volume report describes the findings of an analysis of income differences between whites and nonwhites in the United States. Volume I (includes the first three chapters) presents an overview of the study, data on relative earnings of nonwhite and white males in 1970, and data on changes in the nonwhite/white earnings during the 1960's.

COM-75-10624/5GA PC$4.75/MF$2.25
Florida State Univ., Tallahassee. Dept. of Economics.
Changes in the Relative Economic Status of Nonwhite Males During the 60's. Technical Report 1, Volume II,
James Gwartney, Charles Haworth, Joan Haworth, and David Rasmussen. Aug 73, 77p
EDA/OER-75-004-Vol-2
Grant EDA-OER-414-G-72-11
See also Volume 1, COM-75-10623.
Paper copy also available in set of 2 reports as COM-10622-SET, PC$8.00.

Descriptors: *Income, *Negroes, Earnings distribution, Employment, Education, Minorities, Economic surveys, Population migrations, Urban areas, Males, Females, Labor force participation.

The two volume report describes the findings of an analysis of income differences between whites and nonwhites in the United States. Volume II contains the final three chapters and presents evidence on the differential impact of income accordance to color, the nonwhite/white earning for age cohorts, and the relative earnings and payoffs from years of schooling for three educational groups--0-10, 11-13, and 14 years of schooling. A summary of the major findings follows.

COM-75-10674/0GA PC$4.75/MF$2.25
New York Sea Grant Inst., Albany.
Coordination of Marine-Related Higher Education in Nassau and Suffolk Counties.
Final rept.,
Daniel J. Brennan. 18 Dec 74, 80p NYSSGP-RS-75-005 NOAA-75042909
Grant NOAA-04-3-158-39
Prepared by State Univ. Coll., Cortland, N.Y. Dept. of Geology.

Descriptors: *Education, *Universities, *Oceanography, Students, Marine biology, Marine engineering, New York, Boats, Ships, Cooperation, Marine technology.
Identifiers: Curricula, Sea Grant program, Nassau County(New York), Suffolk County(New York).

Following an inventory of marine-related educational resources in Nassau and Suffolk Counties, several recommendations are made for establishment of a Mariculture Research Farm and a task force to study marine Industrial Engineering.

NTIS/PS-75/492/9GA
PC$25.00/MF$25.00
National Technical Information Service, Springfield, Va.
Productivity (A Bibliography with Abstracts).
Rept. for 1964-Mar 75,
Mary E. Young. Jul 75, 147p*
Supersedes COM-74-11571.

Descriptors: *Productivity, *Bibliographies, *Manpower utilization, Economic analysis, Management planning, Personnel development, Performance(Human), Output, Job satisfaction, Employment, Industrial training, Work measurement, Job analysis, Incentives, Motivation.

Productivity change, industry breakdowns measurements, effects of job improvement, personnel management to increase productivity, and the relationship of productivity to the economy as a whole are among the topics in the reports abstracted in the bibliography. (Contains 142 abstracts).

NTIS/PS-75/498/6GA
PC$25.00/MF$25.00
National Technical Information Service, Springfield, Va.
Mathematical Models of Manpower and Personnel Management. Volume 1. 1964-1973 (A Bibliography with Abstracts).
Rept. for 1964-1973,
Mary E. Young. Jun 75, 177p*
See also Volume 2, NTIS/PS-75/499.

Descriptors: *Personnel management, *Bibliographies, *Mathematical models, Manpower utilization, Employment, Evaluation, Forecasting, Management planning, Specialized training, Education, Job analysis, Human resources.
Identifiers: Manpower training.

Models of manpower allocation, systems and requirements, as well as specific task systems, forecasting, and evaluation are covered in the reports abstracted in the bibliography. Both military and civilian requirements are included. (Contains 172 abstracts).

NTIS/PS-75/499/4GA
PC$25.00/MF$25.00
National Technical Information Service, Springfield, Va.
Mathematical Models of Manpower and Personnel Management. Volume 2. 1973-May 75 (A Bibliography with Abstracts).
Rept. for 1973-May 75,
Mary E. Young. Jun 75, 102p*
See also Volume 1, NTIS/PS-75/498.

Descriptors: *Personnel management, *Bibliographies, *Mathematical models, Manpower utilization, Employment, Evaluation, Forecasting, Management planning, Specialized training, Education, Job analysis, Human resources.
Identifiers: Manpower training.

Models of manpower allocation, systems, and requirements as well as specific task systems, forecasting, and evaluation are included in the reports abstracts. Both military and civilian requirements are covered. (Contains 97 abstracts).

N75-21498/1GA PC$5.75/MF$2.25
Carleton Univ., Ottawa (Ontario). Wired City Lab.
The Educational Communications Project.
Dec 74, 136p

Descriptors: *Computer assisted instruction, *Heuristic methods, *Information systems, *Learning theory, Communication theory, Computer programs, Computer systems programs,

Learning machines, Teaching machines, Technology assessment.

For abstract, see STAR 1313

N75-22182/0GA PC$11.25/MF$2.25
Washington Univ., St. Louis, Mo.
Large-Scale Educational Telecommunications Systems for the US: An Analysis of Educational Needs and Technological Opportunities.
R. P. Morgan, J. P. Singh, D. Rothenberg, and B. E. Robinson. Apr 75, 426p NASA-CR-142619, CG-75/1
Contracts NGR-26-008-054, NSF EC-38871

Descriptors: *Communication satellites, *Education, *Technology utilization, *Telecommunication, Computer assisted instruction, Educational television, Information systems, United states of america.

For abstract, see STAR 1313

PB-241 527/1GA PC$3.75/MF$2.25
Civil Service Commission, Washington, D.C. Office of Labor-Management Relations.
Multi-Unit Agreements in the Federal Government.
Periodic rept.
Feb 75, 32p

Descriptors: *Labor relations, *Agreements, National government, Labor unions, Negotiated contracts, Surveys.

This publication contains listings of Federal recognition units which are covered by a negotiated agreement covering more than one such recognition unit. The data were extracted from the Labor Agreement Information Retrieval System (LAIRS), an automated data file of all Federal service labor agreements maintained by the Commission. The recognitions included are listed by agency and recognitions covered by the same agreement have the same multi-unit number within each agency. Also listed for each recognition is the CSC region in which it is located, the union and local number, total number of employees covered by that recognition, and the expiration date and duration of the agreement.

PB-241 700/4GA PC$4.25/MF$2.25
Pennsylvania Office of Administration, Harrisburg. Bureau of Personnel.
Personnel Management Review.
Final rept.
Aug 74, 56p M505.2 USCSC-74-PA-01C

Descriptors: *Personnel management, *State government, *Reviewing, Government policies, Manuals, Management methods, Reporting methods, Government employees.

This is essentially a working document describing the procedures and techniques used in the personnel management review process. It gives instructions and suggestions on planning reviews; on-site review work plans and activities; and reporting and review follow-ups. Appendices include program review elements; sample comprehensive and employee benefit questionnaires; and sample letters on employee notification, agency head notification, and personnel officer notification.

PB-241 900/0GA PC$4.25/MF$2.25
United Way of Greater Memphis, Tenn.
WAGES (Women and Girls Employment Enabling Service). Non-Traditional Jobs...Women Want Them; The Law Supports Them.
Rept. for 1 Jun 72-15 Jun 74,
Leathia S. Thomas, and Sandy Dickey. Sep 74, 68p DLMA-88-47-72-02
Contract DL-88-47-72-02

Descriptors: *Specialized training, *Females, Employment, Community relations, Counseling, Upgrading, Education, Aptitudes, Labor unions, Apprenticeship, Placement, Social welfare, Employer attitudes.
Identifiers: WAGES project.

The Goals of the program are to aid and supplement existing agency efforts to open and expand employment opportunities through volunteers and to create entry into employment areas traditionally closed to women. Staff and volunteers provided counseling and referrals to applicants. Personal presentations were made to employers to inform them of benefits through the project and to open jobs. Supportive services included aid for training, transportation, child care and job finding techniques. Activities centered on the promotion of employment based on merit and qualification rather than race or sex and relating to the target population through self-concepts, motivation and orientation to the world of work.

PB-241 921/6GA PC$3.75/MF$2.25
Oak Ridge Associated Universities, Inc., Tenn. Manpower Development Div.
The Development and Diffusion of the Training and Technology Program: A Decade of Development of Manpower Training 1965-1975.
Final rept.,
Gary H. de Mik, Ronald O. Hietala, and Wendell H. Russell. 31 Jan 75, 43p 1-75-1 DLMA-A-20-47-73-18-75-1
Contract DL-20-47-73-18

Descriptors: *Industrial training, *Personnel development, Unskilled workers, Project planning, Education, Placement, Skilled workers, Aptitudes, Upgrading, Craftsmen, Manpower, Poverty groups, Specialized training, Disadvantaged minorities.
Identifiers: TAT project.

The report describes the development of a model training program, Training and Technology, and subsequent efforts to diffuse the innovation. Before the inception of TAT, a survey study, Resources for Southern Manpower Development, had indicated that the South had considerable manpower development potential and need. TAT was organized by Oak Ridge Associated Universities and Union Carbide Corporation, Nuclear Division to develop the potential and satisfy the need. The program capitalized on the industrial training capacity and the industrial environment of an actual production facility to produce an up-to-date training system carefully designed and frequently modified to meet current industrial needs. The concept in its final form involved six months of full time training with the curricula directed entirely toward actual job skills. When the concept was fully established and its effectiveness demonstrated, ORAU encouraged diffusion of the model. The model is analyzed in terms of its potential for diffusion.

PB-241 938/0GA PC$4.75/MF$2.25
National Committee on Employment of Youth, New York.
Upgrading and Credentialling Paraprofessionals: Developing New Models in Human-Service Occupations.
Final rept. Sep 70-May 72 on Phase I.
1972, 89p DLMA-82-34-70-29-1
Contract DL-82-34-70-29
See also PB-241 939.

Descriptors: *Specialized training, *Paraprofessional personnel, Upgrading, Qualifications, Education, Aptitudes, Manpower, Employment, Training devices.

The report covers the first phase, September 1970 through May 1972 of a project to develop alternative qualifications for, and new routes to, credentials for paraprofessional human service workers.

PB-241 939/8GA PC$6.25/MF$2.25
National Committee on Employment of Youth, New York.
Upgrading and Credentialling Paraprofessionals; Developing New Models in Human Service Occupations. Appendices.
Final rept. Sep 70-May 72 on Phase I.
1972, 152p DLMA-82-34-70-29-2
Contract DL-82-34-70-29
See also PB-241 938.

Descriptors: *Specialized training, *Paraprofessional personnel, Upgrading, Qualifications, Education, Aptitudes, Manpower, Employment, Training devices, Project planning.

The report is an appendix to the report of the first phase, Sept. 1970 through May 1972 of a project to develop alternative qualifications for, and new routes to, credentials for paraprofessional human service workers.

PB-241 978/6GA PC$11.50/MF$2.25
California State Personnel Board, Sacramento.
Career Opportunities Development Program of the California State Personnel Board.
Final rept. 1970-73.
Jan 74, 461p DLMA-82-05-70-28
Contract DL-82-05-70-28

Descriptors: *Career development, Civil service, Education, Employment, Government employees, Government policies, Job analysis, Local government, Manpower, Personnel development, Personnel management, Placement, Qualifications, State government, Upgrading, California.
Identifiers: Career opportunities development program.

The California State Personnel Board developed procedures for employing disadvantaged persons, particularly welfare recipients, in State and local government agencies, at specially designed entry level jobs, and for upgrading them to regular jobs. The procedures included classification and training and special efforts, through a coordinator in the employing agency, to expedite the new employees' progress into regular jobs.

PB-242 073/5GA PC$4.75/MF$2.25
Technical Education Research Centers, Inc., Champaign, Ill. Midwest Center.
Instructor Training Institutes for NHTSA Curriculum Package: Traffic Court Judges.
Final rept. 20 Jun 74-31 Mar 75,
V. E. Burgener, and Dorothy Reese. May 75, 78p DOT-HS-801 584
Contract DOT-HS-4-00962

Descriptors: *Specialized training, *Workshops, Courts, Traffic safety, Instructors, Personnel development, Conferences.
Identifiers: *Traffic court judges, Curriculum development, DOT/5A, DOT/5K.

The purpose of this project was to orient a core of key adjudicative personnel to knowledge of the design and development of a training course and course curriculum and to illustrate ways in which specific measures of driver control by adjudication could be implemented.

PB-242 076/8GA PC$4.25/MF$2.25
American Council on Education, Washington, D.C. Office of Research.
Teaching Faculty in Academe. 1972-73,
Alan E. Bayer. Aug 73, 63p NSF/RA/S-7-73-042
Grant NSF-GI-34394
See also PB-242 078. Pub. in ACE Research Reports v8 n2 Aug 73.

Descriptors: *Instructors, *Universities, *Data files, Manpower utilization, Data acquisition, Information systems, Statistical data, Demography, Educational levels, Employment profiles, Employment status, Opinions, Attitude surveys, Economic changes, Trends.
Identifiers: Two year colleges, Four year colleges.

In the 1972-73 academic year, the American Council on Education undertook the largest national general-purpose survey of college and university faculty ever conducted. This survey provided information about changes and trends among college and university faculty, and permits exploration of research areas not covered in an earlier survey conducted in 1968-69. The descriptive information in the report present the primary tabular data from the survey participants and can be generalized to all current two-year college, four-year college, and university teaching faculty. The findings are concerned with demographic background, educational background, work history, current position, and opinions and attitudes.

PB-242 077/6GA PC$3.75/MF$2.25
American Council on Education, Washington, D.C. Office of Research.
Selected Policies and Practices in Higher Education,
John A. Creager. Sep 73, 30p NSF/RA/S-73-043
Grant NSF-GI-34394
See also PB-242 078. Pub. as ACE Research Reports v8 n4 Sep 73.

Descriptors: *Education, *Universities, *Policies, Surveys, Placement, Instructors, Performance evaluation, Behavior, Services.
Identifiers: *Higher education, Administrative practices, Academic credits, Admitting methods, Instructor effectiveness, Grading practices.

The policies and practices of the nation's colleges and universities constitute the means for achieving the aims of higher education. This report provides the results of a survey of the policies and practices of institutions of higher education. These policies and practices focus on the following: academic credit or advanced placement; admissions policies and practices, student evaluations of teaching effectiveness; policies and practices concerning student behaviors and services to students; grading practices; special undergraduate programs; instructional facilities and procedures. This study is descriptive only, dealing with the incidence of various policies and practices in institutions of higher education. The study is seen as being preparatory to further longitudinal studies concerning the impact of such policies and practices.

PB-242 078/4GA PC$4.25/MF$2.25
American Council on Education, Washington, D.C. Office of Research.
Low-Income Students: Do They Differ from Typical Undergraduates,
Engin I. Holmstrom. Sep 73, 54p NSF/RA/S-73-044
Grant NSF/GI-34394
See also PB-242 079. Pub. as ACE Research Reports v8 n5 Sep 73.

Descriptors: *Universities, *Students, *Low income groups, *Performance evaluation, Prediction, Sociopsychological surveys, Statistical processes, Policies, Reference groups, Variations, Management guidelines.
Identifiers: Achievement, Undergraduates, Performance indicators.

The unprecedented expansion of two-year colleges in recent years and the new policies of universal higher education have made post-secondary education increasingly more accessible to new types of students. This report is the first in a series investigating the educational experiences and progress of students who differ in important ways from the typical undergraduate. The study's findings indicate that both low-income and other income students were less likely to attain the baccalaureate in four years if they attended two-year colleges or large institutions, while low-income students in highly selective institutions were more likely to attain the degree in four years than were those in less selective schools. The academic success of the low-income student is particularly dependent on certain sources of support if he is to make satisfactory progress.

PB-242 079/2GA PC$3.75/MF$2.25
American Council on Education, Washington, D.C. Office of Research.
Low Achievers: Do They Differ from Typical Undergraduates,
Engin I. Holmstrom. Sep 73, 50p NSF/RA/S-73-045
Grant NSF-GI-34394
See also PB-242 080. Pub. as ACE Research Reports v8 n6 Sep 73.

Descriptors: *Students, *Abilities, *Universities, Analysis of variance, Performance evaluation, Comparison, Performance standards, Sex, Age groups, Attitudes, Expectations, Statistical data.
Identifiers: *Low achievement groups, *Undergraduates, Probability, Dropouts, Failure.

This is the second report in a series investigating the education attainment of a 'typical' or 'new' types of students. In this report, the educational experiences and progress of undergraduate students who were not high achievers in secondary school is compared with the experiences and progress of those who were. The study's findings show how both low achievers and regular students attending highly selective institutions were more likely than those in less selective institutions to obtain the B.A. degree within four years. It also indicated that while attending a university increased the regular students' chances of completing the B.A. degree in four years, it apparently lowered the chances of the low achievers. Low achievers in two-year colleges seem less likely to receive the degree.

PB-242 080/0GA PC$4.25/MF$2.25
American Council on Education, Washington, D.C. Office of Research.
Older Freshmen: Do They Differ from Typical Undergraduates,
Engin I. Holmstrom. Oct 73, 53p NSF/RA/S-73-046
Grant NSF-GI-34394
See also PB-242 106. Pub. in ACE Research Reports v8 n7 Oct 73.

Descriptors: *Students, *Age groups, *Universities, *Abilities, Analysis of variance, Attitudes, Motivation, Demography, Youths, Adults, Background, Expectations, Performance, Recommendations, Comparative studies, Sex.
Identifiers: Freshman students, Academic degrees.

In this report, the educational progress of freshmen who are 20 years of age or older at the time of martriculation is described. The report indicates that older students differed from average-age students in their demographic and academic backgrounds; in their reasons for college attendance; in their undergraduate activities, aspirations, and achievements; and in some of their attitudes. The study indicated that older students, particularly older women, like low-income students interested in getting their baccalaureate within the traditional four-year period.

PB-242 101/4GA PC$7.50/MF$2.25
Technical Education Research Centers, Inc., Champaign, Ill. Midwest Center.
Training State and Community Instructors in Use of NHTSA Curriculum Packages: Driver Improvement Analysis, Driver License Examiner-Supervisor and Traffic Record Analysis.
Final rept. 29 Jun 73-30 Jun 74,
V. E. Burgener, and Dona Tiryakioglu. Aug 74, 238p DOT-HS-801 203
Contract DOT-HS-100-3-738
Supersedes PB-235 714.

Descriptors: *Traffic safety, *Specialized training, *Personnel management, Instructors, Personnel development, Motor vehicle operators, Licenses, Workshops.
Identifiers: Curricula, Driver education, DOT/3N, DOT/3K.

A series of five national instructor training institutes were planned for each of three emerging highway safety technician areas for which curriculum packages have been prepared (Driver Improvement Analysis; Driver License Examiner-Supervisor; and Traffic Record Analysis). The report contains detailed information on successful operation of Manpower Training Institutes for NHTSA. The number of potential instructor enrolled were: DIA - 44; DLES - 57; TRA - 55. All but four states were represented by enrollee(s) in one of more institutes. Individual response to the institutes was very positive.

PB-242 103/0GA PC$5.50/MF$5.50
Urban Inst., Washington, D.C.
Forecasting the Impact of Technological Change on Manpower Utilization and Displacement: An Analytic Summary,
Alan Fechter. Mar 75, 59p* UI-1215-1, URI-99000
Sponsored by National Science Foundation, Washington, D.C.

Descriptors: *Technology change, *Manpower utilization, Skilled workers, Abilities, Personnel management, Mathematical models, Evaluation, Forecasting, Personnel development, Labor market.

The current capability to forecast shifts in employment opportunities because of the advent of new technology is analyzed on the basis of existing manpower models. The models are evaluated according to the reasonableness of their structure and the accuracy of their predictions. The models are also evaluated on the basis of their potential value in policy formation. This value is assumed to depend on the nature of supply adjustments in the labor market. Recommendations are given for research that would improve manpower requirement models.

PB-242 106/3GA PC$3.75/MF$2.25
American Council on Education, Washington, D.C. Office of Research.
Four Years After College Entry,
Alan E. Bayer, Jeannie T. Royer, and Richard M. Webb. Mar 73, 42p NSF/RA/S-73-041
Grants NSF-GI-34394, NSF-C741
See also PB-242 076. Pub. as ACE Research Reports v8 n1 Mar 73.

Descriptors: *Students, *Development, *Universities, Sociological surveys, Time, Attitudes, Expectations, Financial assistance, Objectives, Recommendations, Opinions, Psychological guidance.
Identifiers: *Follow up programs, Freshman students, Achievement, Dropouts.

Since 1966 the Cooperative Institutional Research P.ogram (CIRP) of the American Council on Education has conducted a large scale annual survey of freshmen entering col-

lege. Subsamples of these students have been followed up periodically. The report presents extensive descriptive data concerning the degree aspirations and attainment, academic achievement, education financial support, field of study, life objectives, and attitudes of the students studies. Highlights of the report include the following findings: (1) Over the undergraduate years, students appear to become less inclined to strive for status and to seek financial success in later life, and instead increase their aspirations to succeed in artistic endeavors. They also become more inclined to want to be helpful to others. (2) A majority of these former freshmen believed that undergraduate education would be improved if course work were more relevant to contemporary living and if more attention were paid to the emotional growth of students.

PB-242 379/6GA PC$10.00/MF$2.25
Decision Making Information, Santa Ana, Calif.
Evaluation of the Emergency Employment Act Welfare Demonstration Project.
Final rept.
30 Apr 75, 375p MEL-75-08
Contracts DL-43-2-002-06, DL-63-06-73-02

Descriptors: *Employment programs, *Public employment, *Job opportunities, Surveys, Performance evaluation, Economic impacts, Social effect, Social welfare, Management methods, Benefit cost analysis, Questionnaires.
Identifiers: Demonstration projects, Alternatives.

The report provides an analysis of operations and impacts of an employment program on participants as measured against the major and subsidiary program objectives. It assesses the success of demonstration projects in providing real jobs in public service agencies to welfare recipients, the ability of the recipient to perform these jobs, and the rate of transition of the participants into unsubsidized permanent employment. In addition, the report examines the workability of the strategy and the cost benefit of providing public service employment to welfare recipients as an alternative to maintaining them on welfare. The analysis is based on data gathered by resident research analysts at four demonstration sites and a three-wave longitudinal survey of 1,465 participants interviewed over a two year period.

PB-242 381/2GA PC$4.75/MF$2.25
Nebraska Univ., Lincoln. Water Resources Research Inst.
University of Nebraska Faculty with Competence in Water Resources. Second Edition.
Feb 75, 79p Pub-6 W75-08472, OWRT-A-999-NEB(15)
Contract DI-14-31-0001-5027

Descriptors: *Scientists, *Education, Universities, Research and development, Water resources, Nebraska.

Information was prepared to provide a basis for identifying individuals with special competence and expertise for research and/or teaching in the water resources field at the University of Nebraska. It is expected that this listing will be useful in the future development of both individual and interdisciplinary research project activities.

PB-242 478/6GA PC$3.25/MF$2.25
Civil Service Commission, Washington, D.C. Office of Labor-Management Relations.
Maternity/Sick Leave Provisions in Federal Agreements.
Final rept.
Jun 75, 15p USCSC/OLMR-75/01

Descriptors: *Leave time, *Civil service, Government employees, Labor relations, Agreements, Federal policies.
Identifiers: *Sick leave, *Maternity leave.

A survey of Federal labor agreements contained in the LAIRS file found more than 400 agreements with maternity leave provisions along with sick leave provisions. This report provides a review and analysis of the maternity/sick leave provisions found. Key elements discussed are uses of sick leave, requirements for medical certificate, advance and abuse of sick leave, and maternity leave. Typical clauses are cited extensively throughout the report.

5J. Psychology (Individual and Group Behavior)

AD-A010 669/0GA PC$3.25/MF$2.25
Air Force Personnel and Training Research Center Lackland AFB Tex
Review of Research on Effects of Psychological Stress upon Performance,
Richard S. Lazarus, James Deese, and Sonia F. Osler. Dec 51, 18p Rept no. Research Bull-51-28

Descriptors: *Performance(Human), *Stress(Psychology), Scientific research, Reviews, Experimental data, Test methods, Measurement, Assessment, Skills, Air Force training.
Identifiers: *Psychological stress effects.

The effect of emotional or psychological stress on human performance is an important consideration in many activities. A combat situation represents an outstanding example. Stress is induced in many other activities, for example, in accelerated training programs where great emphasis is placed on completing a difficult course successfully in limited time. Since not too much is known regarding the specific effects of psychological stress on various types of human performance, this problem presents a fruitful and challenging area for human resources research. This bulletin represents a review of past investigations of the effects of stress.

AD-A010 879/5GA PC$3.75/MF$2.25
Catholic Univ of America Washington D C Center for Research in Thinking and Language
A Logical Description of the Deduction of Instances from Concepts.
Interim rept.,
Thomas H. Mott, Jr., and Bruce M. Ross. May 75, 46p Rept no. CRTL-TR-3
Contract N00014-67-A-0020
See also report dated Mar 75, AD-A008 240.

Descriptors: *Logic, *Reasoning, Psychology, Problem solving, Accuracy, Psychological tests.
Identifiers: *Concept formation, *Deduction, Inference.

A formal logical description is given of concept instantiation, the deduction of valid instances that satisfy a single concept or a list of two or more concepts. Advantages pertaining to the deductive scheme are enumerated together with its relation to a previously worked out model of concept attainment, the deduction of concepts from instances. Several instantiation problems and their solutions are presented to illustrate the practical usefulness of the scheme. The claim is made that no rationale has previously been given for this type of problem as the psychology of thinking has usually studied problems in which the concept-instance relation is arbitrary.

AD-A010 962/9GA PC$3.75/MF$2.25
Rand Corp Santa Monica Calif
Face Perception: A Review of Experiments with Infants, Normal Adults, and Brain-Injured Persons,
R. K. Yin. Feb 75, 32p Rept no. P-5348

Descriptors: *Visual perception, *Face(Anatomy), *Behavioral science, Correlation techniques, Attitudes(Psychology), Recognition, Associative processing, Experimental data, Reliability, Personality, Infants, Adults, Mental disorders.
Identifiers: *Face perception, *Judgment(Psychology), Brain damage.

Two observations about human behavior suggest that the human face may be a special visual object. First, the average person can discriminate and remember hundreds of faces in spite of the fact that faces are highly similar objects. Second, the average person uses the face as a source of a great amount of information about other individuals. Identification is but one aspect of this information; faces also serve as the basis for inferences about character and personality, mood, and the specific feelings being expressed by another person.

JPRS-64802 PC$3.25/MF$2.25
Joint Publications Research Service, Arlington, Va.
Means of Propaganda Indoctrination,
B. Ts. Badmaev, and Yu. I. Sadchikov. 20 May 75, 9p
Trans. of mono. Metodika i Psikhologiya, Moscow, 1974 p55-62.

Descriptors: *Propaganda, *Specialized training, Methodology, Translations, USSR.

The report contains a description of the means of indoctrination available to a propaganda worker.

NTIS/PS-75/505/8GA
PC$25.00/MF$25.00
National Technical Information Service, Springfield, Va.
Drinking Drivers (A Bibliography with Abstracts).
Rept. for 1964-Jun 75,
Elizabeth A. Harrison. Jun 75, 96p*

Descriptors: *Bibliographies, *Motor vehicle operators, *Alcohols, Drugs, Visual perception, Traffic safety, Motor vehicle accidents, Law enforcement, Drug addiction, Accident prevention.
Identifiers: *Drug abuse, Alcohol ingestion, *Drinking drivers, Breath alcohol analysis, Alcohol intoxication.

The selected abstracts of Federally-sponsored research reports cover the effects of alcohol on motor vehicle operators. This includes studies on visual perception, performance tests, alcohol ingestion, safety, and criminal justice. (Contains 91 abstracts). See also NTIS/PS-75/506, Alcoholism.

NTIS/PS-75/506/6GA
PC$25.00/MF$25.00
National Technical Information Service, Springfield, Va.
Alcoholism (A Bibliography with Abstracts).
Rept. for 1964-Jun 75,
Elizabeth A. Harrison. Jun 75, 100p*
Supersedes NTIS/PS-74/110.

Descriptors: *Bibliographies, *Alcoholism, Drug addiction, Rehabilitation, Preventive medicine, Therapy, Physiological effects, Psychological effects, Behavior, Sociology.
Identifiers: Drug abuse, Drug treatment programs, *Alcohol intoxication, Alcohol ingestion.

The selected abstracts of Federally-sponsored research reports cover rehabilitation, social aspects, psychological and physiological effects of alcoholism. Excluded are studies on drinking drivers. (Contains 95 abstracts). See also NTIS/PS-75/505, Drinking Drivers.

PB-241 907/5GA PC$7.25/MF$2.25
Michigan Univ., Ann Arbor. Survey Research Center.
Effectiveness in Work Roles, Report 1: Validating Quality of Employment Indicators,
Cortlandt Cammann, Robert P. Quinn, Terry A. Beehr, and Nina Gupta. Apr 75, 201p* DLMA-92-26-72-35-1
Contract DL-92-26-72-35
See also PB-241 908.

Descriptors: *Employment surveys, *Job satisfaction, Performance, Attitudes, Effectiveness, Job analysis, Absenteeism, Performance, Work environment, Quality of life, Surveys, Fringe benefits.

The study examined criteria of work role effectiveness representing the three perspectives of the employee, the employer, and society, using four methods of data collection -- interviews, observations, company records, and supervisory ratings. Data were obtained from 506 employees of a hospital, a printing company, and an automobile accessories manufacturing company. Eleven criteria of effectiveness were identified, and the predictive power of a Quality of Employment indicator (Challenge, Resource Adequacy, Comfort, and Financial Rewards) with reference to each of these examined. The possibility of improving the indicator by tapping alternative data sources was explored.

PB-241 908/3GA PC$4.75/MF$2.25
Michigan Univ., Ann Arbor. Survey Research Center.
Effectiveness in Work Roles, Report 2: Measuring Working Conditions Through Standardized on-the-Job Observations,
David A. Nadler, and G. Douglas Jenkins, Jr. Apr 75, 88p* DLMA-92-26-72-35-2
Contract DL-92-26-72-35
See also PB-241 907.

Descriptors: *Employment surveys, *Job satisfaction, Performance, Attitudes, Effectiveness, Job analysis, Absenteeism, Performance, Work environment, Quality of life, Surveys, Fringe benefits.

The report describes the development, use, and evaluation of standardized on-the-job observations as a new source of information about the nature and quality of jobs. It is the second report of the Effectiveness in Work Roles study. The present report is divided into six parts. The first part discusses the considerations that were important in the development and implementation of the observation instrument. The second discusses the basic methodological questions and issues to be considered in the evaluation of any new data-gathering technology. The third part builds on these issues to outline the method used to evaluate the observational technique. The fourth presents some evaluative data from the Effectiveness in Work Roles study. The fifth part discusses these data and is followed by a set of conclusions and recommendations for further research.

PB-242 072/7GA PC$3.25/MF$2.25
Washington Univ., St. Louis, Mo. Dept. of Psychology.
Qualitative Vocabulary Test Responses and Age,
Jack Botwinick, Robin West, and Martha Storandt. Jun 75, 17p
Grants PHS-HD-04524, PHS-HD-00047

Descriptors: *Verbal behavior, *Intelligence tests, *Age groups, Ratings, Responses, Hypotheses, Correlations, Comparison, Senior citizens, Youths.
Identifiers: Wexler adult intelligence scale, Vocabulary, Synonyms.

Vocabulary test responses as traditionally scored were compared to these same responses when scored for finer nuances of understanding, as determined by the criterion of superior synonyms. It was hypothesized that the latter would be more related to age in a deficit pattern than the former. The results partly supported the hypothesis and partly not. In the context of the positive results, it is not clear whether the aged cannot, or simply do not, give synonym responses as readily as the young. It may be more of a cohort preference not to, rather than an age limitation of intellectual ability.

5K. Sociology

AD-A010 797/9GA PC$4.25/MF$2.25
Naval Postgraduate School Monterey Calif
Nonverbal Communication in First Impression Formation: The Relationship of Proxemics and Kinesics to Interpersonal Perception Processes in the U.S. Navy.
Master's thesis,
Arthur Walter Wittig. Mar 75, 65p

Descriptors: *Social communication, *Interpersonal relations, *Behavioral science, Naval personnel, Personnel management, Social psychology, Ethnic groups, Sex, Sociometrics, Theses, Space perception.
Identifiers: *Nonverbal communication, Proxemics, Kinesics, First impressions, Nonverbal behavior.

This thesis reviews the literature in the field of nonverbal communications, with the major emphasis being placed on first impression formation, particularly in the Navy setting. The social situation is examined as it affects nonverbal communication. The areas of nonverbal communication reviewed are proxemics and kinesics. The thesis concludes that managers may be able to form more accurate first impressions by using the information provided. Increased awareness and attention to the subtle implications of race, color, sex, and the social situation may increase human understanding of nonverbal behavior, thus making interpersonal relations more enjoyable and productive.

AD-A010 932/2GA PC$4.25/MF$2.25
Rand Corp Santa Monica Calif
Recent Research Insights into Local Migration Flows,
Peter A. Morrison, and Daniel A. Relles. Feb 75, 58p Rept no. P-5379

Descriptors: *Population, *Migration, Mathematical models, Mathematical prediction, Regression analysis, Employment, Correlation techniques, Social sciences, Estimates, Data bases, Flow, Scientific research.

Uncertainty about migration at the local level is such that planning agencies have little to guide them in estimating changes that have occurred since the 1970 census enumeration. This paper reports the results of research to develop a data-based model for estimating and projecting gross (directional) local migration. The study has been based on a unique national body of longitudinal data, the Social Security Continuous Work History Sample, covering the period 1959-1965. Two general questions have guided the analysis. First, what economic and demographic factors account for the variations over time in cities' gross inflow and outflow rates. Second, how can these variations be monitored reliably in view of widely varying inflow and outflow levels, but their short-term responsiveness to economic conditions.

AD-A010 976/9GA PC$3.75/MF$2.25
Rand Corp Santa Monica Calif
A Housing Services Policy for Low-Income Urban Families in Underdeveloped Countries,
Georges Vernez. Dec 74, 26p Rept no. P-5328

Descriptors: *Housing(Dwellings), *Underdeveloped areas, *Nations, Marketing, Policies, Construction, Urban areas, Finance, Management planning and control, Classification.
Identifiers: *Developing countries, *Squatter communities, Services, Low income families.

Housing policies for urban low-income families in underdeveloped countries have typically stressed the public supply of fully serviced standard housing units, but these policies are mostly unsuccessful. In practice, a large proportion of the demand for shelter has been overflowing into so-called squatter settlements that are developing at the periphery of most large sized cities of the emerging nations. The paper discusses a housing services policy which promises to be effective for these families. The financial component of the policy is studied.

N75-22197/8GA PC$10.25/MF$2.25
California Univ., Berkeley. Institute of Governmental Studies.
Interactions of Technology and Society: Impacts of Improved Airtransport, a Study of Airports at the Grass Roots.
T. Laporte, S. Rosenthal, S. Ross, K. N. Lee, and E. Levine. Dec 74, 395p NASA-CR-142693
Contract NGR-05-003-471

Descriptors: *Air transportation, *Airports, *Technology assessment, Economics, Policies, Politics, Sociology.

For abstract, see STAR 1313

PB-241 603/0GA PC$3.75/MF$2.25
National Criminal Justice Information and Statistics Service, Washington, D.C.
Crime in the Nation's Five Largest Cities. National Crime Panel Surveys of Chicago, Detroit, Los Angeles, New York, and Philadelphia. Advance Report.
Apr 74, 35p

Descriptors: *Crimes, Statistical analysis, Urban areas, Criminal investigations, Illinois, Michigan, California, Pennsylvania, New York.
Identifiers: Chicago(Illinois), Detroit(Michigan), Los Angeles(California), Philadelphia(Pennsylvania), New York City(New York), Victims.

The Panel uses scientific sampling procedures to gauge the extent of victimization of individuals over age 12, households, and commercial establishments. In each city, about 10,000 households and 2,000 commercial establishments comprised the sample. Although respondents were asked about a variety of crime related events, only certain specific crimes were selected for measurement. For individuals, these were rape, robbery, assault and personal larceny; for households, burglary, larceny, and auto theft; and for commercial establishments, burglary and robbery. The report examines the characteristics of victims and, where possible, explores such facets of victimization as the relationship between victim and offender, the time and place of occurrence, the injury or loss suffered, and whether or not the event was reported to the police. Because the Panel measures victimizations not reported to the police, in addition to those that come to official attention, it is expected to produce rates of victimization higher than those previously documented.

PB-241 687/3GA PC$10.25/MF$2.25
Motor Vehicle Manufacturers Association of the United States, Inc., Detroit, Mich. Vehicular Security Committee.
Motor Vehicle Theft. A Bibliography.
Final rept. 1 May-31 Oct 74,
Arthur Kingsbury. 1974, 379p* MVMA-AK-74-05

Prepared in cooperation with Macomb County Community Coll., Mt. Clemens, Mich. Dept. of Public Service.

Descriptors: *Motor vehicles, *Theft protection equipment, *Criminology, *Bibliographies, Locks(Fasteners), Documentation, Security, Automobiles, Advertising, Crimes, Juvenile deliquency.
Identifiers: Automobile thefts, *Stolen vehicles, Burglaries.

The bibliography is the first effort in the field of vehicular theft to identify loss, categorize or develop a comprehensive source document which could be used as a basis to judge the amount of written documentation within this field of interest. One of the most vulnerable areas for loss has been the transportation field. This bibliography of vehicular theft published literature was predicated on establishing a functional base for future discussions and research in the area of vehicular loss.

PB-241 701/2GA PC$4.75/MF$2.25
RAND Corp., Santa Monica, Calif.
Annual Report of the Housing Assistance Supply Experiment (1st).
Final rept.
Oct 74, 100p R-1659-HUD
Contract HUD-H-1789

Descriptors: *Federal assistance programs, *Housing studies, Housing research, Rental housing, Federal aid, Family characteristics, Project management.
Identifiers: *Housing allowance programs.

The paper was prepared as part of the Supply Experiment, which is a major component of the Experimental Housing Allowance Program. The experiment is designed to test the market and community response to a full-scale housing allowance program and to measure mobility patterns of recipient families. The report summarizes the design of the experiment and recounts the history of the project since it was first considered in the Fall of 1971. Special attention is given to the implementation phase of the experiment, which began in March 1973 and will continue into 1981. The report describes the achievements of the Housing Allowance Program and its Associated Research Program through September 1974; discusses the current problems of both programs; and explains their schedules of future events.

PB-241 831/7GA PC$9.50/MF$2.25
National Criminal Justice Information and Statistics Service, Washington, D.C. Statistics Div.
Expenditure and Employment Data for the Criminal Justice System 1972-73.
State and local government special studies.
Feb 75, 349p* SD-EE-5
Prepared in cooperation with Bureau of the Census, Washington, D.C. Report No. GSS-70.
Paper copy available from GPO.

Descriptors: *Law enforcement, *Operating costs, Courts, Correctional institutions, Police, Services, Expenses, Employment, Poverty groups, State government, Local government, Standard metropolitan statistical areas, Statistical analysis.

Specific data are supplied for the Federal Government, the 50 State governments, and the aggregate of the local levels of government within each State. In addition, estimates have been produced for each State of the percentum of the State and local law enforcement expenditure funded and expended by units of general local government. Data are also shown for each of 312 counties, 384 cities and the 17 largest SMSA's (Standard Metropolitan Statistical Areas). The presentation of the tables is divided into the two major parts-the summary 'Criminal Justice System' section, showing the interrelationship of the various sectors of the system, and the six 'Sector' Sections, providing a further breakdown of data on particular criminal justice activities-police protection, judicial, legal services and prosecution, indigent defense, corrections, and Governments combined for all criminal justice activities and that two-third of the total full-time equivalent criminal justice employees of all governments are employed by local governments.

PB-242 007/3GA PC$5.75/MF$2.25
American Univ. Law Inst., Washington, D.C.
Evaluative Research in Corrections: A Practical Guide. Prescriptive Package.
Final rept.,
Stuart Adams. Mar 75, 134p
Grant LEAA-73-TA-1001
Paper copy also available from GPO.

Descriptors: *Correctional services planning, *Management guidelines, *Research methods, Evaluation, Objectives, Criteria, Measurement, Models, Computerized simulation, Research needs, Personnel selection, Benefit cost analysis, Mathematical prediction.
Identifiers: Research utilization.

The primary focus for correctional management is upon the development of basic and straightforward evaluation efforts. Emphasis is placed on practical applications rather than theory. The material describes the present status of evaluative research in corrections, the impact of selected cases on responsibilities, skills and attitudes required of correctional managers if research is to be facilitated and its products wisely used. Research methods and strategies as well as basic research concepts and procedures such as objectives, criteria, methods of measurement, models, and old and new research methods, are included. Methods by which evaluative research in corrections may be improved, and systematic assessments to achieve progressive improvements of evaluation and program development based on effective evaluation efforts are also presented.

PB-242 013/1GA PC$4.25/MF$2.25
National Criminal Justice Information Statistics Service, Washington, D.C. Statistics Div.
Capital Punishment, 1971-72.
National prisoner statistics bulletin.
Dec 74, 66p SD-NPS-CP-1

Descriptors: *Criminal justice, *Prisoners, Statewide statistics, Correctional institutions, Classifications, Age groups, Ethnic groups, Sex, Time, Crimes, State legislation, Revisions, Constitutional law.
Identifiers: *Capital punishment, *Inmates, Death sentences, Constitutionality.

This report provides information on the number of prisoners under sentence of death during calendar years 1971 and 1972 in state correctional institutions, there having been no such inmates in federal prisons in either year. Inmates are categorized by age, sex, race, offense, and time spent on death row. The report gives information on the number of new death sentences meted out and the number of sentences disposed of by means other than execution, and it includes data charting annual trends in executions since the beginning of 1930. A brief summary of the legal status of capital punishment in the various states also is provided. A narrative summary of general findings precedes the charts and tables which make up the body of the report.

PB-242 029/7GA PC$7.00/MF$2.25
RAND Corp., Santa Monica, Calif.
Supply Experiment of the Experimental Housing Allowance Program. Housing Allowances and Household Behavior.
Working note (Final),
Ira S. Lowry, Mack Ott, and Charles Noland. Jan 73, 190p WN-8028-HUD
Contract HUD-H-1789
See also PB-242 030.

Descriptors: *Financial assistance, *Low income families, Experimental design, Formulas(Mathematics), Residential buildings, Algorithms, Discount rates, Economic analysis, Incentives, Evaluation, Rental payments, Inequalities, Household characteristics, Social welfare, Housing market, Community relations, Mobility.
Identifiers: *Housing allowance programs, Income maintenance.

This paper was prepared as part of the Supply Experiment, which is a major component of the Experimental Housing Allowance Program. The Supply Experiment is designed to test the market and community response to a full-scale housing allowance program and measure mobility patterns of recipient families. The report analyzes and compares a number of housing allowance formulas that have been proposed for use either in Experimental Housing Allowance Programs or in a national program. The purpose of the analysis is to assist HUD generally in selecting the most promising formulas for field testing and development.

PB-242 030/5GA PC$3.25/MF$2.25
RAND Corp., Santa Monica, Calif.
Supply Experiment of the Experimental Housing Allowance Program. Data Management System: Part I. Fieldwork Data and Data Transfer Specifications.
Working note (Final),
G. Levitt. Jul 72, 16p WN-7885-HUD
Contract HUD-H-1789
See also PB-242 029 and PB-242 031.

Descriptors: *Financial assistance, *Low income families, Experimental design, Housing market, Community relations, Mobility, Data acquisition, Data processing, Data storage, Security systems, Management methods, Specifications.
Identifiers: *Housing allowance programs, Follow up programs.

This paper was prepared as part of the Supply Experiment, which is a major component of the Experimental Housing Allowance Program. The Supply Experiment is designed to test the market and community response to a full-scale housing allowance program and to measure mobility patterns of recipient families. This document describes the procedures and specifications that will be used to achieve and maintain high-quality data for analysis in the Supply Experiment. The procedures, as a series of integrating steps, include data validation, data coding, data digitizing, data cleaning, and data storage.

PB-242 031/3GA PC$5.75/MF$2.25
RAND Corp., Santa Monica, Calif.
Supply Experiment of the Experimental Housing Allowance Program. General Design Report: Supplement.
Working note (Final),
Ira S. Lowry. Aug 73, 135p WN-8364-HUD
Contract HUD-H-1789
Supplement to rept. no. WN-8198-HUD dated May 73, 'General Design Report: First Draft', PB-242 033. See also PB-242 030 and PB-242 032.

Descriptors: *Financial assistance, *Low income families, Experimental design, Housing market, Community relations, Mobility, Program design, Incentives, Purchasing, Site surveys, Economic impacts, Estimates, Indexes(Ratios), Neighborhoods, Management methods.
Identifiers: *Housing allowance programs, Benefits.

This paper was prepared as part of a supply experiment, designed to test the market and community response to a full-scale housing allowance program and to measure mobility patterns of recipient families. The report is a supplement to the general design report of May, 1973. It consists of a discussion of some 15 issues related to the experimental design raised by the design review panel selected jointly by Rand and HUD, and includes specific revisions of Rand's earlier design proposal where appropriate.

PB-242 032/1GA PC$3.75/MF$2.25
RAND Corp., Santa Monica, Calif.
Supply Experiment of the Experimental Housing Allowance Program. Preliminary Description of Survey Instruments.
Working note (Final),
Jun 72, 28p WN-7883-HUD
Contract HUD-H-1789
Supplements rept. no. WN-7866-HUD dated Jun 72, 'Preliminary Design of the Housing Assistance Supply Experiment'. See also PB-242 031 and PB-242 033.

Descriptors: *Financial assistance, *Low income families, Experimental design, Housing market, Community relations, Mobility, Survey methods and procedures, Property value, Landlord tenant relations, Data acquisition, Questionnaires, Project planning, Economic surveys, Attitudes.
Identifiers: *Housing allowance programs.

The paper was prepared as part of the Supply Experiment, a major component of the Experimental Housing Allowance Program. The Supply Experiment is designed to test the market and community response to a full-scale housing allowance program and to measure mobility patterns of recipient families. This working note describes and explains the contents of the formal survey instruments to be used in the Supply Experiment. Three basic surveys are presented: A property appraisal and building survey, a landlord financing survey, and a tenant survey. The paper also indicates a rationale for some of the proposed lines of questioning of information to be gathered in questionnaires.

PB-242 033/9GA PC$9.25/MF$2.25
RAND Corp., Santa Monica, Calif.
Supply Experiment of the Experimental Housing Allowance Program. General Design Report: First Draft.
Working note (Draft),
Ira S. Lowry. May 73, 314p WN-8198-HUD
Contract HUD-H-1789
Supersedes rept. no. WN-7866-HUD dated Jun 72. See also supplement, PB-242 031, and PB-242 034.

Descriptors: *Financial assistance, *Low income families, Experimental design, Housing market, Community relations, Mobility, Program design, Objectives, Management methods, Standards, Cost estimates, Monitors, Data processing, Economic analysis, Responses, Government policies, Financing.
Identifiers: *Housing allowance programs.

This paper was prepared as part of the Supply Experiment, which is a major component of the Experimental Housing Allowance Program. The document was prepared as an update of the general design for the Supply Experiment. Component sections and appendixes of the present report have been published as separate Working Notes over the preceding period. These have been revised and are incorporated here into a single document.

PB-242 034/7GA PC$3.75/MF$2.25
RAND Corp., Santa Monica, Calif.
Supply Experiment of the Experimental Housing Allowance Program. Equity and Housing Objectives in Homeowner Assistance.
Working note (Final),
Ira S. Lowry. Jun 74, 44p WN-8715-HUD
Contract HUD-H-1789
See also PB-242 033 and PB-242 035.

Descriptors: *Financial assistance, *Low income families, Experimental design, Housing market, Community relations, Mobility, Standards, Constraining, Assets, Payment, Ownership housing.
Identifiers: *Housing allowance programs, Ceilings(Economics), Limitations.

The document discusses Rand's views on two program standards that have been proposed for homeowner assistance in the Supply Experiment which is a major component of the Experimental Housing Allowance Program. One standard is a dollar ceiling on the amount of assets that may be held by a program participant. The other limits a participant's allowance payment to the amount of actual housing expenses. The Supply Experiment is designed to test the market and community response to a full-scale housing allowance program and to measure the mobility patterns of recipient families.

PB-242 035/4GA PC$4.75/MF$2.25
RAND Corp., Santa Monica, Calif.
Supply Experiment of the Experimental Housing Allowance Program. Program Standards for Site II.
Working note (Final),
Ira S. Lowry, Barbara M. Woodfill, and Marsha A. Dade. Feb 75, 78p WN-8974-HUD
Contract HUD-H-1789
See also PB-242 034 and PB-242 036.

Descriptors: *Financial assistance, *Low income families, Experimental design, Housing market, Community relations, Mobility, Municipalities, Counties, Standards, Program design, Estimates, Cost estimation.
Identifiers: *Housing allowance programs, *South Bend(Indiana), Saint Joseph County(Indiana), Suitability

This working note recommends program standards for the housing allowance program in South Bend, Indiana. It presents related estimates of program size and allowance costs, and evaluates the ability of the local market to provide housing suitable for program participants. Because the program may later expand to include other parts of St. Joseph County (in which South Bend is located), the program standards are based on countywide data, and program estimates are provided for both South Bend and other parts of the county.

PB-242 036/2GA PC$5.25/MF$2.25
RAND Corp., Santa Monica, Calif.
Supply Experiment of the Experimental Housing Allowance Program. Program Standards for Site I.
Working note,
Ira S. Lowry, Barbara M. Woodfill, and Tiina Repnau. Jan 74, 125p WN-8574-HUD
Contract HUD-H-1789

Descriptors: *Financial assistance, *Low income families, Experimental design, Housing market, Community relations, Mobility, Costs, Economic models, Household characteristics, Economic profiles, Wisconsin.
Identifiers: *Housing allowance programs, Housing adequacy, Brown County(Wisconsin).

The Supply Experiment of the Experimental Housing Allowance Program is designed to test the market and community response to a full-scale housing allowance program and to measure mobility patterns of recipient families. This report proposes a schedule of R* (The standard cost of adequate housing) for households of various sizes, which is used in computing allowance payments to households enrolled in the Supply Experiment in Site I, Brown County, Wisconsin. These costs reflect circumstances at the site in the Fall of 1973 and have not been adjusted to account for any changes since that time.

PB-242 050/3GA PC$8.75/MF$2.25
National Pretrial Intervention Service Center, Washington, D.C.
Pretrial Intervention Strategies: An Evaluation of Policy-Related Research and Policymaker Perceptions,
Roberta Rovner-Pieczenik. Nov 74, 277p*
DLMA-21-11-73-32-02
Grant DL-21-11-73-32

Descriptors: *Criminology, *Policies, *Handbooks, Program design, Criteria, Evaluation, Employment programs.
Identifiers: *Pretrial intervention, Demonstration programs, Innovations, Follow up programs.

An analysis is made of intervention strategies, and a methodology of assessment is given, with an overview of policy-maker concerns. Comprehensive data on projects are reviewed.

PB-242 074/3GA PC$6.25/MF$2.25
Michigan Univ., Ann Arbor. Highway Safety Research Inst.
A Computer Archive of ASAP Roadside Breathtesting Surveys, 1970-1974.
Final rept.,
R. J. Lehman, A. C. Wolfe, and R. D. Kay. Jan 75, 165p UM-HSRI-AL-75-1 DOT-HS-801 502
Contract DOT-HS-031-3-722

Descriptors: *Motor vehicle operators, *Alcohols, *Tests, Surveys, Roads, Consumption, Travel patterns, Statistical data, Traffic safety.
Identifiers: *Breath alcohol analyses, Drinking drivers, ASAP(Alcohol Safety Action Programs), Alcohol safety action programs, Computer applications, DOT/5H, DOT/4FZ/FA.

As part of their evaluation procedures 28 of the 35 federally sponsored Alcohol Safety Action Projects (ASAPs) conducted roadside breathtesting surveys of nighttime drivers between 1970 and 1974. These surveys were brought together into an archive and were reformatted into a single computer file containing 122 variables. This file contains breathtesting results, demographic data, information on alcohol consumption and knowledge about drinking and driving for 75,183 randomly selected drivers, plus 2,701 passengers.

PB-242 100/6GA PC$6.25/MF$2.25
Mount Sinai School of Medicine, New York.
Use of Alcohol by Persons 65 Years and Over, Upper East Side of Manhattan.
Final rept.,
Louise A. Johnson. Jan 74, 166p NIAAA/NCALI-75-17
Contract HSM-43-73-38

Descriptors: *Alcoholic beverages, *Consumption, Old age, Ethnic groups, Low income groups, Retirement, Surveys, New York.
Identifiers: *Elderly persons, New York City(New York).

Persons 65 years of age and older in New York City were questioned about their health, physical mobility, social activity, psychological well-being, and attitudes concerning the use of alcohol and medicinal drugs. A comprehensive report on this survey includes descriptions of: (1) Study background and method of data gathering; (2) Environment and social situation of respondents; and (3) Social and psychological aspects of drinking behavior. The subjects

live in urban neighborhoods with high crime rates, are generally poorer than average, and are mostly minority group members. Findings are generalizable to the extent that although the respondents, like the elderly in other locations have failing health, most are physically and socially active and report a moderate level of happiness. Those who drink are described as being more active, more sociable, and enjoying a more positive psychological status.

PB-242 198/0GA PC$8.50/MF$8.50
Urban Inst., Washington, D.C.
Experimental Design Options to Test Various Approaches to Delivering Legal Services to the Poor,
Leona M. Voght, John S. Scanlon, Thomas W. White, and Joseph S. Wholey. Jan 75, 119p*
URI-97000, UI-511-3
Contract OEO-31607-H-74-02
International Standard Book No. ISBN-87766-137-7.

Descriptors: *Litigations, *Services, *Social welfare, Low income groups, Project planning, Information systems, Management methods, Data acquisition, Government policies, Experimental design.
Identifiers: Legal services, Attorneys.

In creating a Legal Services Corporation, Congress mandated that this new federal agency conduct an evaluation to test different ways to provide legal services to the poor. In advance of the naming and confirmation of a board for the Legal Services Corporation, the Institute was asked to design an experiment that would provide a fair test of the effectiveness of projects providing legal aid through salaried staff attorneys in comparison with projects using members of the private bar. The authors deal with information requirements, measurement instruments, analytic plans, costs, validation of experimental designs, handbooks for data collection, handbooks for implementing field texts, and work plans and schedules for carrying out a national experiment. Several experimental design options are presented.

PB-242 201/2GA PC$5.50/MF$5.50
Urban Inst., Washington, D.C.
Housing Allowances in Kansas City and Wilmington: An Appraisal,
John D. Heinberg, Peggy W. Spohn, and Grace M. Taher. May 75, 48p UI-210-5, URI-11800

Descriptors: *Federal housing programs, *Financial assistance, *Low income families, Experimental design, Housing market, Community relations, Mobility, Evaluation, Program design, Rental payments, Household characteristics, Social change, Missouri, Delaware.
Identifiers: *Housing allowance programs, *Kansas City(Missouri), *Wilmington(Delaware).

This appraisal discusses basic features and impacts of the demonstration programs conducted in Kansas City, Missouri, and Wilmington, Delaware, as evaluated by the Midwest Council of Cities and relates relevant information obtained from the evaluation of these programs to the overall objectives of the Experimental Housing Allowance Program now underway.

PB-242 251/7GA PC$4.25/MF$2.25
RAND Corp., Santa Monica, Calif.
Compensating for Landlord Nonresponse in the Housing Assistance Supply Experiment.
Final rept.,
Adele P. Massell. Jun 73, 75p WN-8268-HUD
Contract HUD-H-1789

Descriptors: *Federal housing programs, *Financial assistance, *Low income families, Landlord tenant relations, Attitudes, Data acquisition, Constraints, Rental housing, Interviews.
Identifiers: Noncooperation, Housing allowance programs.

This paper was prepared as part of the Experimental Housing Allowance Program, designed to test the market and community response to a full-scale housing allowance program and to measure mobility patterns of recipient families. The report examines the possibility that rental-property owners who are to be interviewed as part of the Supply Experiment might decline to cooperate on a scale or in a pattern that threatens the integrity of Rand's proposed analysis of supply response. It explores possible reasons for massive or biased nonresponse and evaluates both their likelihood and their implications for the analysis of landlord expenditure data.

PB-242 317/6GA PC$5.25/MF$2.25
Sunnyvale Dept. of Public Safety, Calif.
Investigation Control and Management System (ICAM),
C. T. Crabtree. 1973, 119p

Descriptors: *Criminology, *Police, Criminal investigations, Modules, Management systems, Reporting methods, Planning, California.
Identifiers: *Arrest and apprehension, Deficiencies, Evidence, Sunnyvale(California).

The report describes ICAM and its current operation in the Department of Public Safety, Sunnyvale, California-the city that has developed and tested the technique. The rationale and the derivation of ICAM is illustrated through the presentation of a conceptual model of the apprehension system, the series of activities which produce information leading to arrest. The system is viewed as an information processing media that acquires, stores, processes, or transmits information that contributes to the systems performance. The flow of apprerehension system activities is described and system performance measures and their use are defined and demonstrated. Deficiencies which commonly exist in police reporting systems and which ICAM is designed to overcome are outlined. The ICAM model is demonstrated using thirty example criminal cases.

PB-242 320/0GA PC$7.00/MF$2.25
San Jose Police Dept., Calif.
San Jose Police Department Burglary Methodology Grant.
Quarterly rept. no. 2, 30 Apr-15 May 74,
Stanley Horton. 30 Apr 74, 178p
Prepared in cooperation with California Council on Criminal Justice, Sacramento.

Descriptors: *Crime reduction, *Urban areas, *Police, Law enforcement, Problem solving, Identifying, Protection, Program design, Forecasting, Data acquisition, Criminology, California, Criminal justice, Management methods.
Identifiers: *Burglaries, *Stolen goods, *San Jose(California), Police methods, Arrest and apprehension, Prosecution.

The objectives of this project are to decrease the number of burglaries expected to occur in the Grant Area during the project year by four percent and to decrease the number of burglaries anticipated for the entire city of San Jose for this period by two percent. A third objective is to improve the effectiveness of the San Jose Police Department to reduce burglaries throughout San Hose in subsequent years. Summaries are presented for activities during this report period. Activities reported in the area of prevention and apprehension include operation ID (Placing Identification on personal property) and operation interview (Gathering Statistical Data on target area residents). Efforts in the burglary reduction process include a technical support proposal and an improved law enforcement effort to limit and control the market for stolen property through apprehension and prosecution of violators. Discussions of problems encountered and anticipated achievements for next year are included.

PB-242 356/4GA PC$7.25/MF$2.25
Fairfax County Office of Research and Statistics, Va.
Fairfax County Profile.
Statistical rept. 1950-74.
Feb 75, 209p FXCO/ORS-75/5

Descriptors: *Population census, *Housing census, *Virginia, Statistical data, Demography, Housing characteristics, Employment, Labor force, Industries, Revenue, Education, Safety.
Identifiers: Fairfax County(Virginia).

The document presents a compilation of statistical information descriptive of Fairfax County, Virginia. Data concerning population, housing, employment, labor force, industry, revenues and expenditing education and public safety are included. Most of the data are presented on a County-wide basis and in certain instances, for smaller area aggregations. Where appropriate, data are provided for different points in time and compared with other sorrounding jurisdictions. The Profile also provides some analysis, demographic tables and charts in an effort to illustrate documentable trends. Basic data source are the U.S. Census for 1950, 1960, and 1970, as well as County and regional agency records.

6. BIOLOGICAL AND MEDICAL SCIENCES

6A. Biochemistry

AD-A010 897/7GA PC$3.25/MF$2.25
State Univ of New York Stony Brook Dept of Chemistry
Self-Association of Beta-Lactoglobulin A in Acid Solution. I. Translational Diffusion Coefficients,
B. Chu, A. Yeh, F. C. Chen, and B. Weiner. 3 Sep 74, 19p ARO-8014.28-C
Grant DA-ARO-D-31-124-73-G30
Availability: Pub. in Biopolymers, v14 p93-109 1975.

Descriptors: *Globulins, *Diffusion, *Coefficients, Solutions(General), Molecules, Interactions, Reprints.
Identifiers: Beta lactoglobulin.

AD-A011 022/1GA PC$3.25/MF$2.25
Armed Forces Radiobiology Research Inst Bethesda Md
Chronic Depression of Serum Sialic Acid Levels in Alloxan-Induced Diabetes.
Scientific rept.,
R. J. O. Woods, P. Z. Sobocinski, W. J. Canterbury, N. S. Mathewson, and K. M. Hartley. Oct 74, 16p Rept no. AFFRI-SR74-25

Descriptors: *Diabetes, *Alloxan, Insulin, Carbohydrate metabolism, Enzymes, Liver, Inhibition.
Identifiers: *Sialic acids, *Fucoses, Depressions.

The study was performed to determine whether alloxan treatment of rats alters levels of the terminal carbohydrate residues L-fucose and sialic acid of serum glyco-proteins. Results indicate that in the uncompensated diabetic animal a chronic depression of serum sialic acid level occurs with no apparent alteration in the level of L-fucose. The depression in sialic acid level may be attributed in part to decreased activities of hepatic enzymes involved in sialic acid synthesis similar to those observed by

others after treatment of rats with the diabetogenic agent streptozotocin. The lack of any significant alteration in the level of L-fucose fails to confirm, in the experimental diabetic animal, the increased protein-bound fucose levels reported in human diabetics. Administration of insulin was not effective in modifying the sialic acid response after alloxan treatment.

CEA-CONF-2919 PC$4.00/MF$2.25
CEA Centre d'Etudes Nucleaires de Cadarache, 13 - Saint-Paul-les-Durance (France). Service de Radio-Agronomie.
Fate of Oxygen in Photosynthesis.
R. Gerster, B. Dimon, and A. Peybernes. 1974, 13p CONF-740946-5
U.S. Sales Only.

Descriptors: (*Oxygen, *Uptake), (*Glycine hispida, Photosynthesis), (*Photosynthesis, *Tracer techniques), Carbon dioxide, Oxygen 16, Oxygen 18, Radionuclide kinetics, Respiration.

For abstract, see NSA 31 12, number 33566.

COM-75-10635/1GA PC$3.25
Rhode Island Univ., Kingston. Graduate School of Oceanography.
Measurements of Phytol in Estuarine Suspended Organic Matter,
D. M. Schultz, and J. G. Quinn. 1 Jul 74, 7p
Marine Reprint-33 NOAA-75042101
Grant NOAA-04-3-158-3
Pub. in Marine Biology, v27 p143-146 1974.

Descriptors: *Suspended sediments, *Gas chromatography, *Chlorophylls, Acyclic alcohols, Chemical analysis, Chlorophylls, Extraction, Detritus.
Identifiers: *Phytol, Reprints, Sea Grant Program.

The unsaturated isoprenoid alcohol phytol is a constituent of the major chlorophyll species a and b and, as such, should be useful as an estimator for chlorophyll values. A method for the extraction of phytol from estuarine suspended organic matter and analysis by gas-liquid chromatography (GLC) is described. Comparisons of the GLC method for phytol-chlorophyll analyses and a spectrophotometric chlorophyll method indicate that the GLC method gives values in good agreement with the spectrophoto-metric procedure. Similar trends in suspended chlorophyll values were observed in Narragansett Bay (Rhode Island, USA) water samples using the GLC method and a fluorometric procedure. The results of these studies indicate that the GLC method provides reliable analyses of chlorophyll and, although more time-consuming, has the advantage that other organic species can be analyzed in the same sample, thus providing additional information on its chemical composition.

COM-75-10706/0GA PC$3.25
Rhode Island Univ., Kingston. Dept. of Pharmacology and Toxicology.
Azoreductase Activity in the Hard Clam, 'Mercenaria mercenaria'(L),
Melvin E. Hanzel, and Gary P. Carlson. 1974, 8p
Marine Reprint-37 NOAA-75051601
Grant NOAA-04-3-158-3
Pub. in Jnl. of Experimental Marine Biology and Ecology, v14 p225-229 1974.

Descriptors: *Clams, *Azo compounds, *Enzymes, Metabolism, Aquatic animals, Shellfish, Toxicology, Detoxification, Oxidoreductases, Liver, Pancreas gland, Marine biology.
Identifiers: Reprints, Mercenaria mercenaria, Sea Grant program.

The hard clam, Mercenaria mercenaria (L.) possesses the capacity for the reduction of nitro groups to amino groups. The ability of the hard clam to metabolize compounds containing an azo linkage is investigated. (The azo linkage is commonly found in synthetic compounds such as pesticides, industrial dyes, food colorings, and drugs.) The hepatopancreas has azoreductase activity as evidenced by the reduction of 1,2-dimethyl-4-(p-carboxyphenylazo)-5-hydroxybenzene. This activity was higher at 37C than at 22C and the pH optimum was 8.0. The reaction was stimulated by the addition of flavin mononucleotide and inhibited by air. Activity was found in both the 105,000 g soluble and the microsomal fractions of the hepatopancreas.

CONF-750319-1 PC$5.25/MF$2.25
Oak Ridge National Lab., Tenn.
Analytical System for the Rapid Separation of Tissue Nucleotides at Low Pressures on Conventional Anion Exchangers.
J. X. Khym. 1975, 41p

Descriptors: (*Nucleotides, *Ion exchange), Organic acids, Resins, Solvent extraction.

For abstract, see NSA 31 12, number 35685.

COO-3085-38 PC$4.00/MF$2.25
Harvard Medical School, Boston, Mass.; New England Deaconess Hospital, Boston, Mass. Cancer Research Inst.
Hormonal Regulation of Enzyme Synthesis in Differentiating Mammalian Tissues.
O. Greengard. 1974, 8p

Descriptors: (*Enzymes, *Biosynthesis), Fetuses, Glucagon, Glucocorticoids, Liver, Rats, Secretion, Thyroxine.

For abstract, see NSA 31 12, number 35689.

LBL-3679 PC$10.00/MF$2.25
California Univ., Berkeley Lawrence Berkeley Lab.
Role of Manganese in Photosynthetic Oxygen Evolution.
R. E. Blankenship. Jan 75, 137p
Contract W-7405-eng-48

Descriptors: (*Photosynthesis, *Biochemical reaction kinetics), Chloroplasts, Manganese, Oxygen, Plant cells, Plants.

For abstract, see NSA 31 12, number 35693.

6B. Bioengineering

LBL-3227 PC$4.00/MF$2.25
California Univ., Berkeley Lawrence Berkeley Lab.
Instrumentation for Environmental Monitoring in Biological Systems.
N. M. Amer, R. M. Graven, R. J. Budnitz, and D. A. Mack. Dec 74, 3p CONF-741213-15
Contract W-7405-eng-48

Descriptors: Air pollution, Biological materials, Cadmium, Carbon monoxide, Environment, Herbicides, Ionizing radiations, Lead, Mercury, Metals, Monitoring, Nickel, Pesticides, Quantitative chemical analysis, Radiation monitoring, Sampling, Sulfur oxides, Water pollution.

For abstract, see NSA 31 12, number 33378.

6C. Biology

AD-A010 638/5GA MF$2.25
Fish and Wildlife Service Laurel Md Patuxent Wildlife Research Center
Wintering Areas of Bird Species Hazardous to USAF Aircraft.
Final rept. 6 Jun 73-30 Jun 74,
Danny Bystrak. Apr 75, 162p AFWL-TR-74-217
Prepared in cooperation with the National Audubon Society, Washington, D.C.
Availability: Available in microfiche only.

Descriptors: *Bird strikes, *Aviation safety, United States, Geographical distribution, Aircraft, Maps, Abundance, Identification, Collision avoidance.
Identifiers: Bird migrations.

Maps showing the winter distribution and relative abundance of 144 species of North American birds were prepared from counts made during the National Audubon Society's annual Christmas Bird Count. The species selected for mapping are members of those bird families that are considered the greater potential threat to low-level aircraft operations within the continental United States. The discussion accompanying the maps summarizes the potential hazard to aircraft of the various species with relation to concentration areas, time of year, time of day, and geographical features.

AD-A010 650/0GA PC$3.25/MF$2.25
Gorgas Memorial Lab Balboa Heights Canal Zone
Monkeys as Hosts of Human Malaria and Other Pathogens.
Annual rept. 1 Sep 73-31 Dec 74,
Richard N. Rossan, and David C. Baerg. Jan 75, 25p
Contract DADA17-72-C-2031
See also report dated Jan 74, AD-775 856.

Descriptors: *Malaria, *Plasmodium, *Monkeys, Hosts(Biology), Primates, Models, Parasitic diseases, Parasites, Anopheles, Disease vectors, Erythrocytes, Liver, Laboratory animals.
Identifiers: *Animal models.

Alouatta villosa villosa was experimentally infected with trophozoite stages of Plasmodium falciparum. Five serial passages were made in intact hosts, with maximum parasitemias in excess of 35,000 per cmm, thus establishing a new model for investigation. A virulent strain of vivax malaria showed average maximum parasitemias of more than 100,000 per cmm in Aotus, at least two times greater than such values with New World strains. Twenty-six monkeys representing 8 species were biopsied for vivax exoerythrocytic (EE) stages. EE forms were found in 4 A. geoffroyi, 2 Saimiri, 4 Cebus and 1 Aotus, from 7 to 11 days after inoculation. Some of the best development was seen in Cebus, a host refractory to the blood stages, while several unusual forms were apparent in Saimiri at 10 days. An acquired Aotus-adapted brasilianum strain produced parasitemias of 500,000 per cmm in Panamanian monkeys.

AD-A010 692/2GA PC$3.25/MF$2.25
Kyushu Univ Fukuoka (Japan) Dept of Parasitology
Occurrence of the Lung Fluke, 'Paragonimus Peruvianus' in Costa Rica,
Ichiro Miyazaki. 5 Aug 74, 7p ARDG(FE)-349-4
Contract DAJB17-73-C-0025
Summary in Japanese.
Availability: Pub. in Japanese Jnl. of Parasitology, v23 n5 p280-284 Oct 74.

Descriptors: *Parasites, *Lung, Costa Rica, Crabs, Infections, Reprints.
Identifiers: Paragonimus peruvianus, Lung flukes, Paragonimiasis.

By the author's survey in February 1974, seven metacercariae of Paragonimus peruvianus were collected from six of 46 freshwater crabs in two localities near San Jose, Costa Rica. Five of six infected crabs were identified as Ptychophallus tristani and the remainder as Potamocarcinus magnus. This lung fluke seems to be widely distributed in Central America and the northern part of South America, and is suspected to cause human paragonimiasis in

some countries such as Peru, Ecuador and Costa Rica.

AD-A010 694/8GA PC$3.25/MF$2.25
Alaska Univ College Inst of Marine Science
Primary Productivity of the Benthic Microalgae in the Chukchi Sea near Barrow, Alaska,
G. E. M. Matheke, and Rita Horner. 20 Mar 74, 8p Rept no. IMS-Contrib-222
Contract N00014-67-A-0317-0003
Summary in French.
Availability: Pub. in Jnl. of the Fisheries Research Board of Canada, v31 n11 p1779-1786 1974.

Descriptors: *Algae, *Chukchi Sea, Microbiota, Winter, Coastal regions, Alaska, Abundance, Marine biology, Reprints.

The primary productivity of the benthic microflora was measured using in situ techniques. Primary productivity ranged from below 0.5 mg C m-2 h-1 in winter when the sampling area was covered with ice to nearly 57.0 mg C m-2 h-1 in August. This is 8 times the productivity of the ice algae and twice that of the phytoplankton.

AD-A010 959/5GA PC$3.25/MF$2.25
Naval Medical Research Unit No 2 Taipei (Taiwan)
Species of Flies Breeding in Latrines in Taipei Area.
Technical rept. Jul 70-Apr 71,
J. C. Lien, and C. Y. Chen. 3 Dec 74, 15p Rept no. NAMRU-2-TR-638
Summary in Chinese.
Availability: Pub. in Chinese Jnl. of Microbiology, 7 p165-175 1974.

Descriptors: *Muscidae, Larvae, Taiwan, Identification, Parasitic diseases, Toilet facilities, Females, Males, Reprints.
Identifiers: Chrysomya megacephala, Boettcherisca peregrina, Hermetia illucens, Telmatoscopus albipunctatus, Psychoda harrisi.

Maggots breeding in latrine vaults from 14 administrative districts of the Taipei area were sampled on four occasions between july 1970 and April 1971. Rearing of the maggots to adults for identification revealed 15 species of dipterous flies belonging to 8 familes, and 1 species of a parasitic hymenopteran. Throughout the warmer months of summer and autumn in 1970 and spring of the following year, the common green-bottle fly, Chrysomya megacephala (32.5-77%) and the flesh fly, Boettcherisca peregrina (19.5-35.4%) were found in greater numbers than the other species. The relation of these flies to human health is briefly reviewed and discussed. The occurrence of Hermetia illucens, Telmatoscopus albipunctatus and Psychoda harrisi in Taiwan is recorded for the first time. The flies collected are illustrated by photographs. (Author)

AD-A011 012/2GA PC$3.75/MF$2.25
Wisconsin Univ Madison Mathematics Research Center
The Geographical Structure of Populations.
Technical summary rept.,
Thomas Nagylaki. Apr 75, 50p Rept no. MRC-TSR-1540
Contract DA-31-124-ARO(D)-462, Grant NSF-MPS72-00381

Descriptors: *Genetics, *Population, Geographical distribution, Mutations, Migration, Evolution(Biology), Mathematical models.
Identifiers: Natural selection, Population migrations.

Work on the geographical structure of populations is reviewed. Both mutation-migration-random drift and migration-selection models are discussed. Some new results are presented.

COM-75-10561/9GA PC$3.25
Hawaii Univ.-Hilo Coll., Hilo.
Intestinal Tumor in the Sea Cucumber, 'Holothuria leucospilata',
A. C. Smith, R. L. Taylor, H. Chun-Akana, and F. Ramos. Sep 73, 5p UNIHI-SEAGRANT-JC-74-17 NOAA-75041003
Prepared in cooperation with California State Coll., San Bernardino. Dept. of Biology. Pub. in Jnl. of Invertebrate Pathology, v22 n2 p305-307 Sep 73.

Descriptors: *Echinodermata, *Neoplasma, Invertebrates, Intestines, Etiology, Pathology, Histology, Aquatic animals.
Identifiers: Sea Grant program, Reprints, Holothuria leucospilata.

The study reports, for the first time, the existence of a tumor within a sea cucumber. Ten specimens were collected in about 15 feet of water at Eniwetok in the Marshall Islands. In one spcimen, a small, darkly pigmented polypoid growth was found on the outer surface of the intestine. Histological examination revealed a tumor with a lumen that connected through a narrow channel in the intestinal wall to the lumen of the intestine. The tumor appeared much like a tiny replica of the intestine, suggesting that it may simply have been a developmental anomaly. Another possibility is that the tumor was a regenerative response to injury. The cause of the tumor was not clear but seems most likely to be a developmental defect or the result of injury from sharp, ingested coral. The lesion was benign.

COM-75-10671/6GA PC$3.25/MF$2.25
Massachusetts Inst. of Tech., Cambridge. Sea Grant Project Office.
A Low-Cost Improvement for Alewife (Herring) Passageways,
Robert W. Day, John W. Zahradnik, and Arthur B. Clifton. 1 Apr 75, 17p MITSG-75-6/JUM NOAA-75042501
Sponsored in part by National Oceanic and Atmospheric Administration, Rockville, Md. Office of Sea Grant. Prepared by Massachusetts Univ., Wareham. Aquacultural Engineering Lab. Index no. 75-606-Z1c.

Descriptors: *Herrings, *Fishways, *Streams, Reproduction(Biology), Animal migrations, Dams, Shallow water, Design, Polymeric films, Cost estimates, Inland waterways, Atlantic Coast Region(United States).
Identifiers: *Alosa pseudoharengus, Sea Grant program.

While once most of the Atlantic coast waterways between Nova Scotia and North Carolina supported annual alewife spawning runs, at present the incidence of alewives making their way inland is often limited to those streams in which wooded or concrete fish ladders have been constructed. The alewives' population has declined as many smaller brooks became too shallow, through natural sedimentation, overgrowth, and manmade obstacles, for the fish to swim upstream to the spawning ponds. The report describes the efforts of the M.I.T. Sea Grant Program and the University of Massachusetts Aquacultural Engineering Laboratory to help rebuild the alewife populations by designing an inexpensive, portable, sheet plastic dam, which can be installed to restore shallow streams as alewife runs.

COM-75-10721/9GA PC$5.25/MF$2.25
Rhode Island Univ., Kingston. Coastal Resources Center.
Commercial Marine Fish and Fisheries of Rhode Island.
Technical rept.,
Stephen B. Olsen, and David K. Stevenson. 1975, 117p Marine-TR-34 NOAA-75051604
Grant NOAA-04-3-158-3

Descriptors: *Fisheries, *Fishing grounds, Management, Commercial fishing, Shellfish, Marine fishes, Fishing equipment, Fish harvesting, Statistical data, Economic effects, Continental shelves, Rhode Island, New England.
Identifiers: Sea Grant program.

The marine fishery of Rhode Island is a renewable resource which, under intelligent management, can make increasing contributions to the state's economic base. This study provides a topical report on the viability of the commercial fishing industry, basic inventory material on fishing stocks and landings and charts which delineate the primary and secondary nearshore fishing grounds of the Rhode Island fleet. Included in part two is a reference guide to the species which comprise the Rhode Island commercial stocks. The authors make major recommendations about development of sound management policies at state and industry levels.

COM-75-50185-04/GA
PC-GPO/MF$2.25-NTIS
National Marine Fisheries Service, Seattle, Wash.
Marine Fisheries Review. Volume 37, Number 4, April 1975.
Monthly pub.,
Willis L. Hobart. Apr 75, 60p NOAA-75051206
Paper copy available from GPO as C55.310:37/4.

Descriptors: *Marine fisheries, Reviews, Aquaculture, Fishing, Commercial fishing, International relations, Fishing grounds, Meteorological satellites, Food deterioration, Lobsters, Shrimps, Salmon.

Eight articles, abstracted separately, are included in this issue. Topics include investigations in planetary aquaculture, marine charter boat fishing industry, distant water fishing, spice treatment of shrimp, energy efficiency comparisons between Washington and Japanese fisheries, spiny lobster fisheries, spoilage prediction of refrigerated fish, and fishing fleet activities revealed by satellites.

COM-75-50185-04-01/GA
(Order as COM-75-50185-04)
Environmental Prediction Research Facility (Navy), Monterey, Calif.
Fishing Fleet Activities Revealed by Night-Time Data from the Defense Meteorological Satellite Program (DMSP),
Robert W. Fett. Apr 75, 5p NOAA-75051206-1, MFR-Paper-1131
Included in Marine Fisheries Review, v37 n4 p1-4 Mar 75.

Descriptors: *Fisheries, *Ocean currents, Meteorological satellites, Marine meteorology, Convergence, Tunas, Pelagic zone, Korea, Japan, Japan Sea.
Identifiers: DMSP satellites.

Meteorological satellites can be of value in assisting the fishing industry through monitoring the location and changes in location of important oceanic convergence zones. The article studies the major convergence zone surrounding Japan and Korea, which is the mixing of the cold Liman Current and the warm Tsushima Current in the Sea of Japan. Because such convergences produce a concentration of forage organisms and small fish, this area is a very good place to fish for tuna, saury, and other pelagic varieties of fish. A satellite photograph of the area suggests that it is a popular practice for fishing vessels to use brilliant exterior allurring lights in search for Pacific saury, a species which prefers to congregate in waters near sharp thermal gradients.

COM-75-50185-04-02/GA (Order as COM-75-50185-04)
National Marine Fisheries Service, Seattle, Wash. Northwest Fisheries Center.
Toward a Planetary Aquaculture - the Seas as Range and Cropland,
Timothy Joyner. Apr 75, 7p MFR-Paper-1132 NOAA-75051206-2
Included in Marine Fisheries Review, v37 n4 p5-10 Apr 75.

Descriptors: *Fishing grounds, *Salmon, *International relations, *Aquaculture, International trade, Foreign policy, Polar regions, Antarctic regions.
Identifiers: Chum salmon.

The oceans' yield of seafood depends on international cooperation. Continuation of the nationally self-serving and shortsighted methods now being used to exploit the world's fisheries could mean that the sea will never reach its full potential as a reservoir of food and protein. The study proposes the creation of an internationally-managed, open range salmon fishery in the presently underutilized waters of the Antarctic seas. Such a fishery could produce a stimulus for further international cooperation in the development and equitable distribution of the untapped potential of the oceans.

COM-75-50185-04-03/GA (Order as COM-75-50185-04)
Georgia Univ., Athens. Dept. of Agricultural Economics.
An Economic Analysis of Georgia's Marine Charter Boat Fishing Industry,
E. Evan Brown, and Fred J. Holemo. Apr 75, 3p NOAA-75051206-3, MFR-Paper-1133
Included in Marine Fisheries Review, v37 n4 p11-12 Apr 75.

Descriptors: *Fishing, *Recreation, Fishing grounds, Boats, Cost estimates, Fishes, Marinas, Georgia.

The Bureau of Outdoor Recreation predicted a fourfold increase in participation of summertime outdoor recreation activities between 1960 and the year 2000 (Anonymous, 1967). It is therefore reasonable to expect the demand for marine charter boat fishing to increase. The report studies Georgia's growing marine charter boat fishing industry. Such topics as fishing areas and species, costs of operation, physical condition, net income, and hours spent in operation are examined.

COM-75-50185-04-07/GA (Order as COM-75-50185-04)
National Marine Fisheries Service, Washington, D.C. Div. of Economic and Marketing Research.
Costs and Earnings in the Spiny Lobster Fishery, Florida Keys,
Bruno G. Noetzel, and Mikolaj G. Wojnowski. Apr 75, 8p MFR-Paper-1137 NOAA-75051206-7
Included in Marine Fisheries Review, v37 n4 p25-31 Apr 75.

Descriptors: *Lobsters, *Fisheries, *Fishing grounds, Fishing equipment, Expenses, Seafood, Law(Jurisprudence), Manpower, Boats, Regulations, Florida.
Identifiers: Panulirus argus.

The spiny lobster (Panulirus argus) is a highly valued seafood item in the United States. The majority of spiny lobsters caught by U.S. fishermen are landed in Florida ports. Thus, Florida's west coast fishery for spiny lobster has been growing rapidly over the past 25 years. About 80% of the landings originated in local waters along the Florida Keys. This fleet of small vessels and boats is the subject of this report. Such factors as laws and regulations, fishing operations (traps, fishing grounds, and equipment), revenue, cost structure, and labor are examined. The report concludes that the spiny lobster fishery off Florida can be quite profitable, with the proper equipment and knowledge.

COO-2472-1 PC$4.00/MF$2.25
Harvard Univ., Cambridge, Mass.
Study of Mathematical Models of Mutation and Selection in Multi-Locus Systems. Annual Progress Report, April 1, 1974--March 31, 1975.
1975, 9p
Contract AT(11-1)-2472

Descriptors: (*Gene mutations, *Mathematical models), Environments, Phenotype, Populations.

For abstract, see NSA 31 12, number 35688.

E75-10281 PC$3.25/MF$2.25
Bureau of Sport Fisheries and Wildlife, Jamestown, N. Dak. Northern Prairie Wildlife Research Center.
Utilization of Skylab EREP System for Appraising Changes in Continental Migratory Bird Habitat.
Monthly progress rept.,
David S. Gilmer. Apr 74, 2p NASA-CR-142718
Contract DI-14-16-0008-802, NASA Order T-4114-B

Descriptors: *Multispectral band scanners, Birds, Migration, Wildlife, Surface water, EREP, Skylab program, Pattern recognition, Thematic mapping.

The author has identified the following significant results. Surface water statistics using data obtained by supporting aircraft were generated. Signature extraction and refinement preliminary to wetland and associated upland vegetation recognition were accomplished, using a selected portion of the aircraft data. Final classification mapping and analysis of surface water trends will be accomplished.

ORO-4023-6 PC$4.00/MF$2.25
Texas Univ., Austin Dept. of Zoology.
Studies of Drosophila Dispersal and Species Packing. Progress Report.
R. H. Richardson. 1 Apr 75, 19p
Contract AT(40-1)-4023

Descriptors: (*Drosophila, *Ecology), Behavior, Biological stress, Genetics, Nutrition, Wind.

For abstract, see NSA 31 12, number 35700.

PAT-APPL-567 718/GA PC$3.25/MF$2.25
Department of Health, Education, and Welfare, Washington, D.C.
Laboratory Mouse Feeder.
Patent Application,
J. Hunziker. Filed 14 Apr 75, 12p DHEW-E-12-75
Government-owned invention available for licensing. Copy of application available NTIS.

Descriptors: *Patent applications, *Laboratory equipment, *Feeders, Feeding(Supplying), Mice, Laboratory animals.

The patent application discloses a feed hopper for the cage of a mouse or other experimental animal. It comprises a substantially rectangular parallelepiped feed chamber containing an open top. A wire mesh base screen is affixed to at least one front surface of the chamber, having a top portion of the wire screen fastened at an angle with respect to the plane of that front surface, and a bottom portion of the screen parallel to the plane of the open top of the feeder. The feeder is designed to restrict the entry of the animal into the feeder and this prevent the contamination of the feed through feces or urine which would distort research results.

PB-242 110/5GA PC$4.25/MF$2.25
Michigan State Univ., East Lansing. Inst. of Water Research.
An Evaluation of Artificial Substrates for Measuring Periphyton Production.
Red Cedar River Series rept. no. 1, Jul 58-Feb 59,
John C. Peters, Robert C. Ball, and Niles R. Kevern. May 68, 70p MSU-IWR-TR-68-0001
Master's thesis.

Descriptors: *Fresh water biology, *Primary biological productivity, *Red Cedar River, Sampling, Marine microorganisms, Substrates, Light(Visible radiation), Algae, Diatoms, Weight(Mass), Theses, Michigan.
Identifiers: *Periphyton.

Plexiglass plates were used as artificial substrates to estimate primary production at four sampling sites in the Red Cedar River watershed near Williamston, Michigan. Evaluation of number of organisms, organic weight accrual, and extracted phytopigment as functions of area and time indicated a close relationship between available light and periphyton production. The same dominant organisms were found on both artificial and natural river substrates, indicating that the substrates were not selective.

PB-242 111/3GA PC$4.75/MF$2.25
Michigan State Univ., East Lansing. Inst. of Water Research.
Primary Production, Energetics, and Nutrient Utilization in a Warm-Water Stream.
Red Cedar River Series rept. no. 2, Nov 57-Jul 58,
Alfred R. Grzenda, Robert C. Ball, and Niles R. Kevern. Oct 68, 83p MSU-IWR-TR-68-0002
Doctoral thesis. Sponsored in part by National Institutes of Health, Bethesda, Md. Div. of Research Grants.

Descriptors: *Fresh water biology, *Primary biological productivity, *Nutrients, *Red Cedar River, Sampling, pH, Alkalinity, Fluid flow, Marine microorganisms, Substrates, Turbidity, Benthos, Inorganic phosphates, Inorganic nitrates, Water pollution, Michigan.
Identifiers: *Periphyton, Trophic level.

Primary production, energetics, and nutrient fixation were investigated in the Red Cedar River, a warm-water stream located in the south central portion of the Lower Peninsula of Michigan, and was primarily concerned with energy-flow and material circulation at the primary level. Periphyton harvested from plexiglass substrata were utilized to determine gravimetric net production estimates, and colorimetric productivity measurements were made by relating the absorbency of phytopigments extracted from the periphyton colony to the ash-free dry weight of the colony. The effect of floods on the seasonal distribution of phosphorus and nitrogen indicates that sanitary drains are the major source of phosphorus and surface runoff the chief source of inorganic nitrogen as they related to stream pollution. Ratios based on phosphorus content of the colony are less reliable indices of pollution and are limited to detection rather than evaluation.

PB-242 112/1GA PC$4.25/MF$2.25
Michigan State Univ., East Lansing. Inst. of Water Research.
The Biology and Chemistry of a Warm-Water Stream.
Red Cedar River Series rept. no. 3 (Final), Jan-May 68,
Morris L. Brehmer, Robert C. Ball, and Niles R. Kevern. Dec 68, 55p MSU-IWR-TR-68-0003

Descriptors: *Water pollution, *Sewage, *Red Cedar River, *Fresh water biology, Water quality, Chemical properties, Dissolved gases, Oxygen, Inorganic phosphates, Inorganic nitrates,

Invertebrates, Sampling, Benthos, Aquatic animals, Biochemical oxygen demand, Michigan.
Identifiers: Dissolved oxygen.

The Red Cedar River, once a productive smallmouth bass stream, is located within the recreational area of metropolitan Lansing. The aesthetic and recreational value of this stream has been reduced as the result of urbanization and increased agricultural use, with the resulting fast run-off, erosion, and siltation, and by the introduction of domestic and industrial pollution. This study is concerned with the effects of nutrient inputs on the ecology of the stream and presents data vital to the reclamation processes. Specific emphasis is given to the ammonia nitrogen content and the dissolved oxygen content of the water, and the families of benthic forms present in the stream. Early observations seem to indicate that stream fertilization resulting from nutrient input released by the decomposition and mineralization of the organic material in the domestic sewage increased the complexity of the standing crop of the area.

PB-242 113/9GA PC$4.75/MF$2.25
Michigan State Univ., East Lansing. Inst. of Water Research.
Nutrients and Primary Production in a Warm Water Stream.
Red Cedar River Series rept. no. 4 (Final), Jun 68-Jul 69,
Morris L. Brehmer, Robert C. Ball, and Niles R. Kevern. Sep 69, 92p MSU-IWR-TR-69-0004

Descriptors: *Fresh water biology, *Primary biological productivity, *Red Cedar River, Nutrients, Sampling, pH, Turbidity, Alkalinity, Dissolved gases, Sewage, Oxygen, Inorganic phosphates, Inorganic nitrates, Benthos, Seasonal variations, Michigan.
Identifiers: *Periphyton, Trophic level, Dissolved oxygen.

The Red Cedar River, a warm-water stream which drains a portion of the south-central part of the lower peninsula of Michigan, was investigated to determine the major nutrient soures and the relationship between primary production and nutrient levels. The results of a study of the entire streams indicated that the major changes in nutrient levels occurred after the introduction of effluents from municipal drains and sewage treatment plant outfalls. During the course of the study the seasonal changes in periphyton production as well as the effects of adverse physical conditions such as high-water levels and associated high turbidities were determined. The aim of this study, and the others in the series, is to obtan a better understanding of nutrient metabolism and the production of organic material in a lotic environment.

PB-242 114/7GA PC$4.25/MF$2.25
Michigan State Univ., East Lansing. Inst. of Water Research.
The Nutrient Composition, Dynamics, and Ecological Significance of Drift Material in the Red Cedar River,
Niles R. Kevern, and Robert C. Ball. Dec 69, 71p MSU-IWR-TR-69-0006

Descriptors: *Fresh water biology, *Ecology, *Red Cedar River, Nutrients, Drift, Sampling, Weight(Mass), Turbidity, Solids, Algae, Diatoms, Inorganic nitrates, Inorganic phosphates, Phytoplankton, Zooplankton, Tables(Data), Michigan.
Identifiers: *Aquatic drift, Seston.

In this study a quantitative and qualitative evaluation of drift material in the Red Cedar River was undertaken. The drift weights and nutrient composition were related to the ecology of the stream and the effects of various physical factors on the drift values were determined. The Red Cedar River watershed is located in rolling agricultural lands immediately east of Lansing, Michigan.

RLO-2225-T23-4 PC$4.00/MF$2.25
Washington Univ., Seattle Dept. of Zoology.
Response of Daphnia Population Size and Age Structure to Predation.
N. G. Jr. Hairston, and R. A. Pastorok. 1974, 17p CONF-740826-5
Contract AT(45-1)-2225

Descriptors: (*Daphnia, *Population dynamics), (*Aquatic ecosystems, *Food), Communities, Invertebrates, Mathematical models, Plankton, Survival time, Vertebrates.

For abstract, see NSA 31 12, number 35701.

6E. Clinical Medicine

AD-A010 569/2GA PC$4.75/MF$2.25
Johns Hopkins Univ Baltimore Md
Infection and Macrophage Function.
Progress rept. no. 8 (Final),
Arthur M. Dannenberg, Jr. 30 May 75, 86p
Contract DADA17-72-C-2187
Availability: Pub. in various jnls.

Descriptors: *Phagocytes, *Tuberculosis, *Lesions, *Enzymes, Rabbits, Culture media, Proteins, Purification, Antibodies, Goats, Substrates, Films, Necrosis, Bioassay, Cells(Biology), Galactose, Pulmonary function, Lymphocytes, Reprints.
Identifiers: *Macrophages, Cathepsin d proteinase, BCG(Bacillus calmette-guerin), Bacillus calmette-guerin.

Cathepsin D type proteinase was completely purified from rabbit lung, and an antibody to it was produced in goats. It was visualized in rabbit dermal bcg lesions with unlabeled antibodies and the peroxidase-antiperoxidase complex, as well as by the cunningham substrate film method (J. Histochem. Cytochem. 15: 292, 1967). It was found in highest concentration in macrophages at the border of the lesions' necrotic (liquefying) centers, and was not increased appreciably in many nearby activated macrophages, which stained intensely for B-galactosidase. When assayed biochemically, rabbit pulmonary alveolar macrophages (AM) from granulomatous lungs (produced by the intravenous injection of heat-killed tubercle bacilli) showed no increase in cathepsin D content over AM from control rabbits, but did show increases in their content of several other lysosomal enzymes. These results suggest that cathepsin D is not involved in lymphocyte-mediated macrophage activation associated with acquired cellular resistance to tubercle bacilli, but that it is involved with the digestion of necrotic material and in all likelihood the process of liquefaction, the most adverse event in the pathogenesis of tuberculosis in man. (Author)

AD-A010 570/0GA PC$3.25/MF$2.25
Johns Hopkins Univ Baltimore Md
Inhibition of the Cathepsin D-Type Proteinase of Macrophages by Pepstatin, a Specific Pepsin Inhibitor, and Other Substances,
Martha H. McAdoo, Arthur M. Dannenberg, Jr., Cara J. Hayes, Stephen P. James, and John H. Sanner. 10 Nov 72, 11p
Contract DADA17-72-C-2187, Grant PHS-HE-14153
Availability: Pub. in Infection and Immunity, v7 n4 p655-665 Apr 73.

Descriptors: *Phagocytes, *Enzymes, *Inhibitors, Pepsins, In vitro analysis, Concentration(Chemistry), Purification, Beef, Lung, Hemoglobin, Substrates, Salts, Chelate compounds, Copper, Barbiturates, Gold, Reprints, Acetophenones, Butanones, Peptides, Amino acids.
Identifiers: *Macrophages, Cathepsin D protenase, Diazophenylbutanone, Pepstatin.

The macrophage is the main cell participating in chronic inflammation. It contains an acid-acting, cathepsin D-type proteinase with the specificity of pepsin, which may release mediators of the inflammatory process. To find new pharmaceutical inhibitors of this proteinase, we tested a variety of chemical compounds in vitro. For this survey, the possible inhibitor (at a concentration of 0.4 mg/ml) was assayed with partially purified cathepsin D-type proteinase from beef lung (a macrophage-rich tissue) and hemoglobin as the substrate. Diazophenylbutanone, three acetophenones, two barbiturates, a gold salt, a copper chelate of a substituted nicotinic acid, a hexapeptide containing a D-amino acid, and Pepstatin inhibited this enzyme; over 200 other potential inhibitors did not. By far the most active and specific inhibitor found to date is Pepstatin, a pentapeptide with two gamma-NH linkages, two beta-OH groups, and five branched aliphatic side chains. Banyu Pharmaceutical Co., Tokyo, Japan, produces this nontoxic compound for the treatment of peptic ulcers. In vitro, as little as 4 ng of Pepstatin inhibits the acid-acting cathepsin D-type proteinase purified from beef and rabbit lung as well as the similar proteinase of rabbit peritoneal and pulmonary macrophages. (Author)

AD-A010 571/8GA PC$3.25/MF$2.25
Johns Hopkins Univ Baltimore Md
Purification and Properties of the Cathepsin D Type Proteinase from Beef and Rabbit Lung and Its Identification in Macrophages,
Oscar Rojas-Espinosa, Authur M. Dannenberg, Jr., Patrick A. Murphy, Patricia A. Straat, and P. C. Huang. 2 May 73, 9p
Contract DADA17-72-C-2187, Grant NSF-GB-8058
Availability: Pub. in Infection and Immunity, v8 n6 p1000-1008 Dec 73.

Descriptors: *Enzymes, *Purification, *Phagocytes, Proteins, Beef, Rabbits, Lung, pH factor, Column chromatography, Fractionation, Acids, Goats, Immunization, Electrophoresis, Serum proteins, Substrates, Hemoglobin, Reprints.
Identifiers: Cathepsin D. Proteinase.

The acid-acting proteinase, cathepsin D (EC 3.4.4.23), was purified from extracts of homogenized rabbit lung and beef lung by autolysis at acid pH, acetone and ammonium sulfate fractionation, column chromatography, and isoelectric focusing. Four isoenzymes were obtained from each source. with acid hemoglobin as the substrate, the proteinase from rabbit lung had a pH optimum of 3.0 and that from beef lung had a pH optimum of 3.6. Their activity was not affected by thiol reagents or by Fe2+, Mn2+, or Mg2+. One isoenzyme from rabbit lung was used to immunize a goat, and one from beef lung was used to immunize a rabbit. In immunoelectrophoresis, each resulting antiserum formed a single precipitin line with its homologous enzyme. They cross-reacted with the other three isoenzymes from the same species, but not with any isoenzyme from the other species. At high concentrations, each antiserum completely inhibited the proteolytic activity of its homologous enzyme. The antiserum against rabbit lung cathepsin D also inhibited the proteolytic activity of rabbit peritoneal and pulmonary macrophages. In limited quantities, this antiserum has now been made commercially available and is being used with labeled antibody techniques to identify under a microscope the presence of cathepsin D in macrophages and to study its role in the pathogenesis of tuberculosis. (Author)

AD-A010 573/4GA PC$3.25/MF$2.25

Enzymes in Tuberculous Lesions Hydrolyzing Protein, Hyaluronic Acid and Chondroitin Sulfate: A Study of Isolated Macrophages and Developing and Healing Rabbit BCG Lesions with Substrate Film Techniques; the Shift of Enzyme pH Optima Towards Neutrality in 'Intact' Cells and Tissues,
Tomiyasu Tsuda, Arthur M. Dannenberg, Jr., Masayuki Ando, Oscar Rojas-Espinosa, and Kiyoshi Shima. 17 May 74, 12p
Contract DADA17-72-C-2187, Grant PHS-HE-14153
Availability: Pub. in Jnl. of Reticuloendothelial Society, v16 n4 p220-231 Oct 74.

Descriptors: *Lesions, *Enzymes, *Hydrolysis, Phagocytes, Rabbits, Cells(Biology), Tissues(Biology), Tuberculosis, Healing, PH factor, Proteins, Chondroitin, Sulfates, Acids, Substrates, Films, Neutralization, Deoxyribonucleic acids, Ribonucleic acids, Inhibitors, Reprints.
Identifiers: BCG(Bacillus calmette-Guerin), Bacillus calmette-guerin, Macrophages, Hyaluronic acid.

By substrate-film techniques, enzymes hydrolyzing protein, hyaluronic acid and chondroitin sulfate were evaluated in glycogen-induced peritoneal PMN, oil-induced peritoneal mononuclear phagocytes (MN) and pulmonary alveolar macrophages (AM) obtained from rabbits. PMN showed the absence or low levels of these enzymes. MN showed moderate levels and AM showed high levels. The pH optimum for whole AM was about 5 when assayed on proteins in substrate films, but the pH optimum for homogenized AM was between 3 and 4 when assayed on proteins in solution. AM homogenates (and purified rabbit lung cathepsin D) retained the pH optimum of 3 to 4 when placed on protein substrate films. Similarly, the pH optimum for whole AM was between 7 and 8 when assayed on hyaluronic acid (and chonodroitin sulfate) in substrate films, but the pH optimum was 4 when extracts of AM were assayed on hyaluronic acid in solution. For sections of BCG lesions on the substrate films, the pH optima resembled AM. Thus hydrolytic enzymes in 'intact' cells and tissues apparently have a higher pH optimum than enzymes in tissue homogenates, possibly due to the presence of activators or inhibitors or other types of interacting molecules.

AD-A010 574/2GA PC$3.25/MF$2.25
Johns Hopkins Univ Baltimore Md
Capillary Density in Developing and Healing Tuberculous Lesions Produced by BCG in Rabbits,
Elpiniki T. Courtade, Tomiyasu Tsuda, Christopher R. Thomas, and Arthur M. Dannenberg, jr. 7 Oct 74, 18p
Contract DADA17-72-C-2187, Grant PHS-HE-14153
Availability: Pub. in American Jnl. of Pathology, v78 n2 p243-256 Feb 75.

Descriptors: *Capillaries(Anatomy), *Blood flow, *Lesions, Quantitative analysis, Rabbits, Phagocytes, Density, Tuberculosis, Skin(Anatomy), Hypersensitivity, Tissues(Biology), Cells(Biology), Healing, Culture media, Injections(Medicine), Reprints.
Identifiers: BCG(Bacillus calmette-Guerin), Bacillus Calmette-Guerin).

Dermal tuberculous lesions were produced in rabbits by the intradermal injection of BCG. At various times after infection, anesthetized animals were perfused with a gelatin-colloidal carbon medium via the abdominal aorta. The capillary density of the nonnecrotic granulation tissue in the lesions was determined quantitatively by counting the capillaries under an ocular grid of a microscope. The capillary density in normal skin near the lesions was 3.8 + or - 0.5 in millimeters of capillary lengths per square millimeter in 250-micrometer tissue section. The capillary density of the nonnecrotic tissue in BCG lesions averaged 6.11 + or - 0.6 mm/sq mm, an increase of 60%. The capillary density remained more or less constant as the BCG lesions grew and then regressed. The development of delayed hypersensivity seemed to increase the capillary density, but this increase may have been a response to an extension of the necrosis at the time delayed hypersensitivity developed. Capillary densities in tuberculin reactions resembled those in BCG lesions. In the early stages, the increased capillary network of dermal BCG lesions was derived mainly from the subpapillary vascular plexus surrounding the hair follicles. As the lesions grew, the cutaneous vascular plexus of the deep dermis supplied branches that surrounded the lower half of the caseous necrotic center and anastomosed with capillaries from the subpapillary plexus supplying the upper half.

AD-A010 575/9GA PC$3.25/MF$2.25
Johns Hopkins Univ Baltimore Md School of Hygiene and Public Health
Macrophage Activation in Tuberculous Lesions,
Arthur M. Dannenberg, jr., M. Ando, O. Rojas-Espinosa, K. Shima, and T. Tsuda. 1974, 13p
Contract DADA17-72-C-2187, Grant PHS-HE-14153
Availability: Pub. in Excerpta Medica International Congress Series No. 325, p223,235.

Descriptors: *Phagocytes, *Lesions, *Tuberculosis, Proteins, Bone marrow, Tissues(Biology), Enzymes, Pathogenesis, Hypersensitivity, Lymphocytes, Immunity, Reprints.
Identifiers: Macrophages, Cathepsin D proteinases.

In contrast to granulocytes, cells of the macrophage series are released from the bone marrow (Volkman, 1970; Van Furth, 1970) into the blood stream in a relatively immature state. They then enter the tissues where they may enlarge and spread out, divide once or twice (Shima et al., 1972; Ando et al., 1972) and manufacture lysosomes and mitochondria and the enzymes that these organelles contain (Dannenberg et al., 1968; Dannenberg, 1968). Such activated or 'angry' macrophages have an enhanced ability to kill or inhibit facultative intracellular micro-organisms like the tubercle bacillus (Dannenberg et al., 1972; Mackaness, 1964, 1968). Throughout this report we shall use the term 'activation' interchangeably with 'acquired cellular resistance' (or 'cellular immunity'). Mackaness (1964, 1968) has shown that such macrophage resistance, once acquired, is not specific for the micro-organism that induced it, but is effective against a variety of facultative intracellular bacteria. (Author)

AD-A010 667/4GA PC$3.25/MF$2.25
Edgewood Arsenal Aberdeen Proving Ground Md
Prevention and Treatment of Corneal Damage after Wearing Contact Lenses.
Technical rept. Jul-Nov 74,
Roy H. Rengstorff. May 75, 6p Rept no. EB-TR-75034

Descriptors: *Cornea, Optometry, Preventive medicine, Therapy, Eye, Wounds and injuries, Examination.
Identifiers: *Contact lenses, Recommendations.

Permanent damage to the cornea is a rare occurrence among wearers of contact lenses. Corneal damage can be prevented when contact lenses are worn less than all of the waking hours and when the patient is examined every six months. Severely distorted corneas can be treated by reducing wearing time gradually and refitting the lenses.

AD-A010 680/7GA PC$3.25/MF$2.25
New Mexico Univ Albuquerque Dept of Pediatrics
A Hamster Model for Streptococcal Impetigo,
Alice H. Cushing, and Edward A. Mortimer, Jr. 19 May 70, 3p
Contract DADA17-67-C-7042, Grant PHS-AI-07501
Availability: Pub. in Jnl. of Infectious Diseases, v122 n3 p224-226 Sep 70.

Descriptors: *Impetigo, *Streptococcus, Hamsters, Injections(Medicine), Lesions, Recovery, Models, Sampling, Reprints.

An animal model of impetigo is described in which group A, type 12 beta-hemolytic streptococci were injected intradermally into the back of the Syrian hamster. Seventy-two (96%) of 75 animals so inoculated developed a lesion similar to human impetigo, from which streptococci were recovered for as long as 22 days. The model resembles human impetigo, is readily sampled repeatedly, and remains relatively free of extraneous organisms during the test period. (Author)

AD-A010 681/5GA PC$3.25/MF$2.25
New Mexico Univ Albuquerque Dept of Pediatrics
Studies of the Relationship Between the Production of Bacteriocines by Group A Streptococci and Acute Glomerulonephritis,
Gary D. Overturf, and Edward A. Mortimer, Jr. 29 May 70, 8p
Contract DADA17-67-C-7042, Grant PHS-AI-07501
Availability: Pub. in Jnl. of Experimental Medicine, v132 n4 p694-701, 1 Oct 70.

Descriptors: *Nephritis, *Streptococcus, *Bioassay, Glomeruli, Culture media, Patients, Contamination, Proteins, Rheumatic diseases, Reprints.
Identifiers: Bacteriocines.

Reeves (1) has reviewed the various theories concerning the actions and functions of the bacteriocines, particularly those of the Gram-negative organisms. Recently, several investigators (2-5) have examined the possible biologic roles of bacteriocines produced by Group A streptococci and enterococci. In 1966 Kuttner (2) studied strains of Group A streptococci recovered from patients with various clinical syndromes, and presented data suggesting that bacteriocine production related to nephritogenicity. Using the 18-Westinghouse strain as an indicator lawn, she tested 94 strains and demonstrated production of bacteriocines by 25% of strains from cases of rheumatic fever, 50% of strains from acute pharyngitis, and 100% of nephritit-associated strains. In addition, she found that approximately 50% of 45 strains from 11 other groups of streptococci produced bacteriocines. The present study was undertaken to examine further Kuttner's observation that nephritogenicity among Group A streptococci is associated with bacteriocine production. The methods employed were therefore as close as possible to those of her study. (Author)

AD-A010 754/0GA PC$3.25/MF$2.25
Naval Medical Research Unit No 2 Taipei (Taiwan)
Isolation of 'Toxoplasama' from a Taiwan Field Mouse, 'Apodemus Agrarius'.
Technical rept.,
John H. Cross, and Frederick J. Santana. 10 Aug 74, 7p Rept no. NAMRU-2-TR-629
Summary in Chinese.
Availability: Pub. in Jnl. of the Formosan Medical Association, 73 p676-678 1974.

Descriptors: *Toxoplasma, Mice, Birds, Taiwan, Mammals, Cats, Brain, Cysts, Intestinal parasites, Oocysts, Feces, Reprints.

Identifiers: Toxoplasma gondii, Apodemus agrarius.

The brains of 109 birds and mammals from Taiepi Hsien, Taiwan were serially passaged into laboratory white mice and Toxoplasma gondii was isolated from one field mouse, Apodemus agrarius. Two kittens, fed mouse brains containing cycts of the new isolate, developed intestinal infection, with oocysts first appearing in the cat feces four and five days after infection. Oocysts continued to appear in the feces up to eleven and twelve days post-infection. This is the first report of the isolation of Toxoplasma gondii from Apodemus agrarius on Taiwan. It offers further evidence that toxoplasmosis is an important zoonotic disease on the island. (Author)

AD-A010 755/7GA PC$3.25/MF$2.25
Naval Medical Research Unit No 2 Taipei (Taiwan)
Studies on the Life History of 'Brachylecithum stunkardi' (Pande, 1939) (Trematoda: Dicrocoeliidae).
Technical rept.,
W. Patrick Carney. 1974, 11p Rept no. NAMRU-2-TR-633
Availability: Pub. in Proceedings of the Helminthological Society of Washington, v41 n2 p139-144 Jul 74.

Descriptors: *Trematodes, *Parasitic diseases, Life cycles, Birds, Montana, Bile ducts, Infections, Snails, Hosts(Biology), Histological techniques, Cercariae, Reprints.
Identifiers: Brachylecithum stunkardi, Nucifraga columbiana, Allogona ptychophora, Bones law.

Brachylecithum stunkardi (Pande, 1939) is reported for the first time from Clark's nutcracker, Nucifraga columbiana, in Montana. Allogona ptychophora served as an experimental first intermediate host. Fully developed cercariae contained in slimeballs were shed 498 days after the ingestion of B. stunkardi eggs. (Author)

AD-A010 756/5GA PC$3.25/MF$2.25
Naval Medical Research Unit No 2 Taipei (Taiwan)
Serological Evidence of Arbovirus Infection in Febrile Hospitalized Patients in Jakarta, Indonesia during 1970-71.
Technical rept.,
P. F. D. Van Peenen, Karl E. Anderson, Richard See, and Remy Nasution. Oct 74, 6p Rept no. NAMRU-2-TR-632
Availability: Pub. in Jnl. of Tropical Medicine and Hygiene, v77 n10 p244-246 Oct 74.

Descriptors: *Arboviruses, *Serology, *Fevers, Dengue, Indonesia, Patients, Influenza virus, Medical examination, Signs and symptoms, Reprints.

Serological evidence of arbovirus infection, presumably dengue, was detected in seven of 56 patients hospitalized with fever in Jakarta, Indonesia, during 1970-1971. Although the arbovirus group was significantly younger, there were no significant differences of signs and symptoms between the patients with fever due to arbovirus infection and those with fever due to other causes. Recent serological evidence of both A and B influenza activity was found in 13 other patients. (Author)

AD-A010 757/3GA PC$3.25/MF$2.25
Naval Medical Research Unit No 2 Taipei (Taiwan)
Scrub Typhus in Eastern Taiwan, 1970.
Technical rept.,
James L. Gale, George S. Irving, Hsin Chih Wang, Jih Ching Lien, and Wei Fu Chen . 12 Jan 74, 11p Rept no. NAMRU-2-TR-631
Availability: Pub. in American Jnl. of Tropical Medicine and Hygiene, v23 n4 p679-684 Jul 74.

Descriptors: *Typhus, Rickettsia, China, Taiwan, Military personnel, Patients, Antibodies, Males, Fevers, Necrosis, Eschar, Serology, Rodents, Mites, Reprints.
Identifiers: Rickettsia tsutsugamushi, Leptotrombidium deliense, Scrub typhus.

An outbreak of scrub typhus occurred in Chinese Army personnel in the eastern part of Taiwan during 1970. This is the first outbreak of the disease documented on the main island of Taiwan since 1932. Of 21 hospitalized patients examined during the convalescent stage, 19 had antibody titers of from one to 640 to one to 10,240 as measured by indirect immunofluorescence to the Karp, Kato and Gilliam stains of Rickettsia tsutsugamushi. All were males of from 35 to 51 years and all had high fever by history. Eleven patients had eschars, six with typical black necrotic scabs. In addition, serologic evidence of prior scrub typhus infection was found in 59 to 241 other men from the two military companies involved in the outbreak. All men had been working clearing an area in hills 300 to 500 meters high. This land was originally cleared for agricultural use, but had been abandoned over 4 years previously. Rickettsia tsutsugamushi was recovered from rodents and chiggers (Leptotrombidium deliense) captured in the area. (Author)

AD-A010 758/1GA PC$3.25/MF$2.25
Naval Medical Research Unit No 2 Taipei (Taiwan)
'Pelodera strongyloides' (Schneider) in the Eye Orbit of Taiwan Rodents.
Research note,
John H. Cross, and Frederick J. Santana. 19 Jul 74, 5p Rept no. NAMRU-2-TR-630
Availability: Pub. in Chinese Jnl. of Microbiology, 7 p137-138 1974.

Descriptors: *Parasitic diseases, *Nematoda, *Larvae, Rodents, Eye, Taiwan, High altitude, Dogs, Bovines, Dermatitis, Soils, Orbits, Salts, Osmosis, Excretion, Infections, Reprints.
Identifiers: Pelodera strongyloides, Rattus culturatus, Apodemus sylvaticus.

Larvae of the ordinarily free-living nematode Pelodera strongyloides were found in the eye orbits of one rattus culturatus and one Apodemus sylvaticus trapped at 2756 meters altitude, Yuanfeng, Nantou hsien in November 1972. In August 1973, the nematode larvae were again found in the eye orbits of one R. culturatus trapped at Hsin-jen-kang, elevation 2400 meters, and two R. culturatus trapped at Tsuifeng elevation 2240, in Nantou Hsien. The exact number of nematodes in each rat was not counted, but was roughly in the range of 5 to 50. To our knowledge this is the first report of this nematode being found in the eye orbits of rodents on Taiwan. P. strongyloides is considered a free-living soil nematode that generally lives in decaying organic materials, bedding or moist soil and the larval forms have also been known to invade the skin of dogs and cattle, causing dermatitis. Furthermore, the larvae have also been found in the lacrimal fluid of the ocular orbit of rodents in England, other European countries and the United States. In life history studies by Poinar it was shown that the larvae, after a development period of 2-3 weeks, leave the orbits of rodent eyes and molt to the adult stages in the soil. Poinar also observed that the larvae develop enlarged phasmids which may be associated with the excretion of salts to aid in regulating their osmotic balance. Throughout these studies he never observed pathological effects of the infections and suggested that the movement of the larvae into the rodent orbits was of benefit to the nematode by carrying it over periods of adversity.

AD-A010 764/9GA PC$3.25/MF$2.25
School of Aerospace Medicine Brooks AFB Tex
The Effects of a Reduced Carbohydrate Intake in the Preparatory Diet and the Reliability of the Oral Glucose Tolerance Test,
Robert O. Hughes. 1974, 6p Rept no. SAM-TR-75-203
Availability: Pub. in Aviation, Space and Environmental Medicine, v46 n5 p725-728 1975.

Descriptors: *Carbohydrates, *Diet, *Tolerances(Physiology), Air Force personnel, Reduction, Glucose, Blood plasma, Diagnosis(Medicine), Patients, Aerospace medicine, Reprints.

Two USAF flying populations of 622 subjects each were subjected to the oral glucose tolerance test. One of these populations was prepared for the test by the ingestion of at least 300 grams of dietary carbohydrate per day for the three days preceding the test; the other by 150 grams of dietary carbohydrate per day. Statistical analysis of the data obtained from these populations revealed no change in the reliability of the oral glucose tolerance test as a diagnostic tool. The preparatory diet containing the lesser amount of carbohydrate is now being used by the USAF School of Aerospace Medicine Consultation Service on all patients undergoing oral glucose tolerance tests. (Author)

AD-A010 765/6GA PC$3.25/MF$2.25
Naval Medical Research Unit No 5 Apo New York 09319
Single-Dose Doxycycline Treatment of Louse-Borne Relapsing Fever and Epidemic Typhus.
Technical scientific rept.,
P. L. Perine, D. W. Krause, S. Awoke, and J. E. McDade. 1974, 9p
Availability: Pub. in The Lancett, p742-744, 28 Sep 74.

Descriptors: *Typhus, *Antibiotics, *Relapsing fever, Epidemiology, Therapy, Patients, Serology, Hypotension, Cardiovascular diseases, Diagnosis(Medicine), Reprints.
Identifiers: Doxycycline, Jarisch-herxheimer reaction, Digoxin.

Twenty-six patients with louse-borne relapsing fever (L.B.R.F.) and 10 others with serologically proven epidemic tyhus were treated with a single oral dose of 100 mg. of doxycycline. All patients were cured and no relapses of L.B.R.F. or typhus occurred during the 2-week period of post-treatment observation. Each of the L.B.R.F. patients experienced a Jarisch-Herxheimer reaction following treatment, which was complicated by hypotension and/or cardiac failure in 5 patients. This was successfully treated with intravenous digoxin. The difficulty of diagnosing typhus and differentiating it from enteric fevers may restrict the use of single-dose doxycycline to epidemics or to mass-treatment campaigns directed at eradicating the human reservoirs of these infections. (Author)

AD-A010 778/9GA PC$4.75/MF$2.25
Letterman Army Medical Center San Francisco Calif
Present Concepts in Internal Medicine. Volume VII, Number 4, July-August 1974. Gastroenterology Symposium,
George E. Burdick, and Lottie B. Applewhite. Aug 74, 86p
See also Volume 7, Number 3 dated Jun 74, AD-A002 582.

Descriptors: *Gastrointestinal system, *Internal medicine, *Meetings, Physiology, Pathology, Metabolism, Therapy, Diagnosis(Medicine), Colitis, Etiology, Liver diseases, Ulcers, Gastrointestinal diseases.
Identifiers: Chronic diseases, *Gastroenterology.

The symposium consists of six articles on ulcerative colitis: diagnosis, differential diagnosis, longsterm systemic complications, liver disease in ulcerative colitis, long-term colonic complications, and treatment. This is not intended to be a comprehensive symposium. Some areas of controversy, such as etiology of ulcerative colitis, have been totally ignored. Etiology of ulcerative colitis is yet to be defined and our thoughts regarding management remain empirical. The symposium represents the best available data on the topics reviewed.

AD-A010 798/7GA PC$5.25/MF$2.25
Naval Postgraduate School Monterey Calif
Physician Supply: An Econometric Approach.
Master's thesis,
William C. Mackey, III, and Robert E. Wiltrout, III. Mar 75, 106p

Descriptors: *Physicians, Theses, Medical personnel, Mathematical models, United States, Economics, Foreign, Students.
Identifiers: Medical education, *Econometrics, Economic models, Licenses, Income.

A model explaining physician supply in the United States from 1953-to 1973 was postulated and estimated. Factors affecting the supply of foreign and domestic physicians were examined separately. Several aspects of medical school capacity and physicians' income were also developed, and recent trends in medical education and the training and licensing of physicians were examined. A model for examining the selection of medical specialties was proposed.

AD-A010 803/5GA PC$3.25/MF$2.25
Naval Medical Research Unit No 2 Taipei (Taiwan)
Influenza A Virus Aboard a U.S. Navy Ship in 1972 and the Antibody Response of the Crew to Influenza Vaccine.
Technical rept.,
I. J. Green, G. S. Irving, S. C. Hung, and J. V. Davenport. Dec 74, 7p Rept no. NAMRU-2-TR-628

Descriptors: *Influenza virus, *Immunology, *Vaccines, Myxoviruses, Antibodies, Response(Biology), Naval vessels, Naval personnel, Military medicine, Serodiagnosis, Immunization, Patients, Infectious diseases.

Following a shipboard influenza outbreak in 1972 in which influenza A viruses antigenically closely related to the A/England/42/72 and A/Queensland/5/72 were isolated, the crew was vaccinated with a vaccine containing 700 CCA units of A/Aichi/68/X-31 virus, to assess its antigenic efficacy in stimulating antibodies against several strains of the virus prevalent from 1957-1972. It was postulated from this study that vaccines containing influenza A strains of the 1968 vintage will not prove to have been very effective against the 1972 influenza A strains, and that it is highly likely that such a vaccine will be less effective against strains which will appear during the 1973-1974 influenza season.

AD-A010 809/2GA PC$3.25/MF$2.25
Naval Health Research Center San Diego Calif
Liaison Psychiatry on a Coronary Care Unit.
Final rept.,
Richard H. Rahe. 1974, 12p Rept no. 75-7
Pub. in Jnl. of Human Stress, Mar 75.

Descriptors: *Coronary disease, *Psychiatry, *Stress(Psychology), Patients, Rehabilitation, Education, Cardiovascular diseases, Outpatient clinics, Hospitals, Mental health, Heart, Physiological effects.
Identifiers: *Coronary care units, Myocardial infarction.

The paper presents several of the author's experiences as a liaison psychiatrist on coronary care units. The psychiatrist's main liaison role is in assisting with patient education and rehabilitation efforts. Examples are given of a patient education program and reasons for systematic evaluations for such programs. The psychiatrist also can aid in patient rehabilitation efforts carried out in the outpatient clinic. Results are given from an experimental program of group therapy as an adjunct to the treatment of post-myocardial infarction patients. Finally, two case histories are briefly presented which exemplify subjects' serum uric acid and serum cholesterol variability associated with psychological stresses encountered during their hospitalizations following a myocardial infarction.

AD-A010 819/1GA PC$3.25/MF$2.25
Armed Forces Radiobiology Research Inst Bethesda Md
The Effects of Traumatic Injury on Spinal Cord Blood Flow.
Scientific rept.,
T. F. Doyle, A. I. Kobrine, and A. N. Martins. Dec 74, 19p Rept no. AFRRI-SR74-31

Descriptors: *Blood flow, *Spinal cord, *Wounds and injuries, Monkeys, Experimental data, Paralysis.
Identifiers: Ischemia.

Using the hydrogen clearance technique, the effect of direct crush injury on blood flow was measured in the lateral white matter and central gray matter of the spinal cord of the adult rhesus monkey. Three measurements were made: at the site of injury (T8-T10), 1 cm above and 1 cm below. After injury, blood flow in the central gray matter declined markedly. However, flow in the lateral funiculus increased 100 percent or more within 2 hours after injury, and then returned to normal range by 8 hours where it remained for at least 24 hours. These data contradict the prevailing theory of a progressive ischemia in the lateral white matter secondary to the development of a hemorrhagic infarct in the central gray matter as a mechanism in crush injury of the cord.

AD-A010 820/9GA PC$3.25/MF$2.25
Armed Forces Radiobiology Research Inst Bethesda Md
Aseptic Endotoxemia in Radiation Injury and Graft Versus Host Disease.
Scientific rept.,
R. I. Walker, G. D. Ledney, and C. B. Galley. Feb 75, 18p Rept no. AFRRI-SR75-1

Descriptors: *Endotoxins, *Radiation injuries, *Immunosuppression, Immunology, Infections, Phagocytes, Radiobiology, Surgical transplantation.
Identifiers: *Graft versus host disease.

Endotoxemia of intestinal origin may impair physiologic and immunologic functions in individuals subjected to high doses of either ionizing radiation or radiation followed by transplants of foreign immune competent cells capable of producing graft versus host disease (GVHD). The results of the following studies support the contention that aseptic endotoxemia may be due to failure to clear endotoxin from the circulation and detoxify it in the liver of immunosuppressed animals.

AD-A010 845/6GA PC$3.25/MF$2.25
Naval Medical Research Unit No 2 Taipei (Taiwan)
Ultrastructural Studies of Intestinal Capillariasis 'Capillaria philippinensis' in Human and Gerbil Hosts.
Technical rept.,
Shih-Chien Sun, John H. Cross, Howard S. Berg, Shih-Liang Kau, and Carlos Singson. 1974, 15p Rept no. NAMRU-2-TR-634
Availability: Pub. in Southeast Asian Jnl. of Tropical Medicine and Public Health, v5 n4 p524-533 Dec 74.

Descriptors: *Hosts(Biology), *Nematoda, *Intestinal parasites, Biopsy, Mice, Electron microscopy, Histological techniques, Patients, Humans, Tissues(Biology), Adhesion, Proteins, Electrolytes(Physiology), Reprints.
Identifiers: Jejunum, Gerbils, Capillaria philippinensis.

Jejunal biopsies from patients with intestinal capillariasis and sections of jejunum obtained at necropsy from experimentally infected Mongolian gerbils were examined by electron microscopy. The ultrastructure of human tissues showed a complete loss of adhesion specilization and widespread separation of the epithelial cells and it is suggested that these changes may be responsible for the loss of protein, fluids and electrolytes from tissue spaces into the intestinal luman. Electron microscopy of the sequence of attachment and penetration of the parasite into the jejunal mucosa of the gerbil showed that fine structural changes of the mucosa are not only the result of direct mechanical compression, but may also be the consequence of a lytic substance(s) originating from the parasite. The lesions are characterized by induction of microulceration of the epithelium and compressive degeneration of the cells. Large cystic intracellular spaces and disruption of the basal lamina observed adjacent to invading larvae may also be due in part to lytic substances released by the parasite. (Author)

AD-A010 904/1GA PC$3.25/MF$2.25
Army Medical Research Inst of Infectious Diseases Frederick Md
Fibrous Osteodystrophy in an Opossum,
Gerald G. Long, James L. Stookey , Timothy G. Terrell, and George D. Whitney. 30 Aug 74, 3p
Availability: Pub. in Jnl. of Wildlife Diseases, v11 p221-223 Apr 75.

Descriptors: *Rodents, *Bones, *Diseases, Nutrition, Lesions, Mandible, Kidneys, Etiology, Parathyroid glands, Reprints.
Identifiers: Opossum, Fibrous osteodystrophy, Maxilla, Hyperparathyroidism.

A free living opossum (Didelphis marsupialis) was found to have severe fibrous osteodystrophy of the maxilla and mandibles. No significant lesions were found in the kidneys, ruling out an etiology of renal secondary hyperparathyroidism. An etiology of primary hyperthyroidism or nutritional secondary hyperparathyroidism is suggested. (Author)

AD-A010 945/4GA PC$3.25/MF$2.25
School of Aerospace Medicine Brooks AFB Tex
Blood Flow during 2-Torr Exposures at Different Decompression Rates.
Rept. for Feb 71-Aug 72,
Julian P. Cooke, and Robert M. Olson. 28 Nov 73, 6p Rept no. SAM-TR-72-452
Availability: Pub. in Jnl. of Applied Physiology, v38 n4 p643-646 Apr 75.

Descriptors: *Decompression sickness, *Blood flow, Dogs, Nitrogen, Losses, Femoral artery, Oxygen consumption, Anoxia, Altitude, Vacuum, Saturation, Tissues(Biology), Reprints, Aorta, Pressure, Paralysis, Recovery, Hypoxia.

The effects of different decompression rates to near-vacuum pressures upon blood flow were investigated in denitrogenated dogs, first decompressed from 258 to 47 torr (27,00 to 63,000 ft), and then decompressed to 2 Torr (130,000 Ft). Mean femoral arterial blood flow slows, and then ceases (as arterial and venous pressures equalize), within 28, 35, 70, or 90 seconds after 1-, 10-, 30-, or 60- second decom-

pressions, respectively. The retention of a 92% arterial blood O2 saturation after a 1 second decompression and a 6% or lower saturation after slow decompression is further evidence that blood flow stops sooner after a rapid decompression. That is, blood flow continues for a longer time after slow decompressions, resulting in greater oxygen desaturation. Although slow decompressions allow more time before unconsciousness, a functional blood flow returns just as soon during recovery after rapid decompressions, and tissue anoxia is expected to be less severe. (Author)

AD-A010 951/2GA PC$3.25/MF$2.25
Army Medical Research Inst of Infectious Diseases Frederick Md
Alterations in Hepatic Chromatin Template Availability during Infection,
H. Shelton Earp. 13 May 74, 5p
Availability: Pub. in American Jnl. of Physiology, v228 n4 p1183-1187 Apr 75.

Descriptors: *Liver, *Chromatin, *Infections, Rats, Inoculation, Bacteria, In vitro analysis, Deoxyribonucleic acids, Ribonucleic acids, Diplococcus pneumoniae, Salmonella typhimurium, Fevers, Metabolism, Adrenal glands, Surgery, Reprints.

Hepatic chromatin was isolated from rats at various times after inoculation with either live or heat-killed bacteria. The chromatin was assayed under conditions that allow determination of the DNA template available to support in vitro transcription. Both a fulminant Diplococcus pneumoniae and a milder Salmonella typhimurium infection produced time-related increases in hepatic chromatin template availability when compared to chromatin isolated from rats inoculated with heat-killed bacteria. Both timing and magnitude of increased template availability correlated with the severity of the infection. The earliest change observed was a 50% rise in availability noted 4 h after inoculation with D. pneumoniae. This preceded the onset of fever, as well as other known hepatic consequences of systemic infection After 24 h of infection the maximum rise of 90% occurred. Similar changes developed during S. typhimurium infection, but were slower in onset and smaller in magnitude. Adrenalectomy prior to infection enhanced the severity of the disease but markedly blunted the increase in template availability. The data are consistant with the hypothesis that systemic infection regulates the hepatic metabolic response to infection through transcriptional control and that a permissive or stimulatory action of glucocorticoids is involved in the increases in template availability effected. (Author)

AD-A010 952/0GA PC$3.25/MF$2.25
Naval Health Research Center San Diego Calif
Psychiatric Occupational Predictors: Application to Drug Rehabilitation Cases,
Darrel Edwards. 1973, 8p Rept no. 72-38
Availability: Pub. in U.S. Navy Medicine, v62 p35-40 Nov 73.

Descriptors: *Psychiatry, *Drug abuse, *Rehabilitation, Naval personnel, Predictions, Drug addiction, Drug withdrawal, Medical examination, Occupational diseases, Therapy, Personality, Reprints.

An examination of 458 drug users in Navy treatment programs revealed that they were poor psychiatric risks for further military service. The implications of the finds for drug-user rehabilitation were discussed. (Author)

AD-A010 953/8GA PC$3.25/MF$2.25
Naval Health Research Center San Diego Calif
Suicide Attempts: An Examination of Occurrence, Psychiatric Intervention, and Outcomes,
Raymond C. Spaulding, and Darrel Edwards. 1975, 8p Rept no. 73-53
Availability: Pub. in Military Medicine, v140 n4 p263-267 Apr 75.

Descriptors: *Psychiatry, *Death, *Behavior, Hospitals, Naval personnel, Marine Corps, Females, Diagnosis(Medicine), Life expectancy, Reprints.
Identifiers: Suicide.

Demographic and suicide attempt information for 83 Navy seaman, 60 Marines and 66 female dependents, referred to psychiatry at San Diego Naval Hospital for suicide attempts were studied. The servicemen were occupationally followed up after hospital referral. Dangerous attempts were associated with more severe psychiatric problems for Navy men. Marines made serious attempts when alone. Dependents had broad histories of acting out and previous psychiatric contact. Men were returned to duty for occupational continuance if the attempt was not seen as dangerous, if other problems were minimal, and if an acting out history was not indicated. Occupational outcomes were at least as good for men who had attempted suicide as for parallel diagnostic groups. (Author)

AD-A010 955/3GA PC$3.25/MF$2.25
Naval Medical Research Unit No 2 Taipei (Taiwan)
Intestinal Parasites and Malaria in the Bada and Gimpu Areas of Central Sulawesi, Indonesia.
Technical rept.,
W. P. Carney, J. Putrali, S. Masri, and 1974, 12p Rept no. NAMRU-2-TR-635
Availability: Pub. in The Southeast Asian Jnl. of Tropical Medicine and Public Health, v5 n4 p534-540 Dec 74.

Descriptors: *Parasitic diseases, *Intestinal parasites, Schistosoma japonicum, Males, Blood, Indonesia, Females, Ascaris, Hookworm disease, Trichuris, Plasmodium falciparum, Iodamoeba, Balantidium, Reprints.
Identifiers: Entamoeba coli, Ascaris lumbricoides, Endolimax nana, Trichuris trichiura, Giardia lamblia, Entamoeba histolytica, Entamoeba hartmanni, Indamoeba butschlii, Balantidium coli, Enterobius vermicularis.

A survey for blood and intestinal parasites was carried out in the Bada and Gimpu Valleys of Central Sulawesi, Indonesia. A total of 542 stool specimens were examined from 285 males and 257 females ranging in age from 1 to 90 years. At least one or more intestinal parasites were found in 77% of the population sampled. Schistosoma Japonicum was not found, even though both valleys are situated down-stream from known endemic areas along the Lariang River drainage system. Hookworm, Entamoeba coli, Ascaris lumbricoides, Endolimax nana, Trichuris trichiura, Giardia lamblia and Entamoeba histolytica, in that order, were the most common intestinal parasites encountered. Other intestinal parasites noted infrequently were Entamoeba hartmanni, Iodamoeba butschlii, Balantidium coli, Enterobius vermicularis, a heterophyid species, an echinostome species, and a fasciolid species. Parasitemias due to Plasmodium falciparum were detected in 2.4% of the population sampled. All were from villages in the Bada Valley. (Author)

AD-A010 956/1GA PC$3.25/MF$2.25
Naval Medical Research Unit No 2 Taipei (Taiwan)
Renal Adenocarcinoma in an Owl Monkey 'Aotus trivirgatus'.
Technical rept.,
R. J. Brown, W. C. Cole, C. P. Chang, and S. H. Hsu. 1975, 6p Rept no. NAMRU-2-TR-639
Availability: Pub. in Jnl. Medical Primatology, 4 p62-64 1975.

Descriptors: *Owl monkeys, *Kidneys, *Neoplasms, Trypanosoma, Necrosis, Exposure(Physiology), Nuclei, Plasmodium, Inoculation, Reprints.
Identifiers: Aotus trivirgatus, Plasmodium vivax.

A renal adenocarcinoma in the right kidney of a 5-year-old female owl monkey is reported. (Author)

AD-A010 957/9GA PC$3.25/MF$2.25
Naval Medical Research Unit No 2 Taipei (Taiwan)
Capillariid-Like Eggs in Livers of Bats from Indonesia.
Research notes,
R. J. Brown, J. H. Cross, P. F. D. Van Peenen, W. P. Carney, and J. Sulianti Saroso. 1974, 6p Rept no. NAMRU-2-TR-636
Availability: Pub. in The Southeast Asian Jnl. of Tropical Medicine and Public Health, v5 n4 p599-600 Dec 74.

Descriptors: *Bats, *Nematoda, *Eggs, Lesions, Liver, Histological techniques, Indonesia, Pathology, Cells(Biology), Soils, Contamination, Hosts(Biology), Life Cycles, Reprints.
Identifiers: Cynopterus brachyotis, Emballonura alectro, Capillariids, Capillaria hepatica, Chiopterans.

AD-A010 958/7GA PC$3.25/MF$2.25
Naval Medical Research Unit No 2 Taipei (Taiwan)
Infectivity and Pathogenicity of 'Toxoplasma' Oocysts for Swine.
Research note,
Philip T. Durfee, C. H. Ma, C. F. Wang, and John H. Cross. 1974, 5p Rept no. NAMRU-2-TR-637
Availability: Pub. in Jnl. of Parasitology, v60 n5 p886-887 Oct 74.

Descriptors: *Toxoplasma, Excretion, Cats, Oocysts, Swine, Intestinal parasites, Feces, Mammals, Birds, Humans, Inoculation, Monkeys, Reprints.
Identifiers: Toxoplasma gondii.

The oocyst of Toxoplasma gondii, which is formed in the epithelium of the cat intestine and excreted in the feces, appears to be the primary infective particle of the parasite. Studies have shown the oocyst to be infective for a wide variety of mammals, birds, and possibly man (Miller et al., 1972, J. Parasit. 58: 928-937). The role of the oocyst in acute toxoplasmosis is relatively unstudied; however, one study (Draper et al., 1971, Brit. Med. J. 2: 375-378), using chimpanzees, demonstrated that oral inoculation of massive numbers of oocysts (2.5 x 10 to the 3rd power) produced only a transient lymphadenitis and few other symptoms in one chimp. The purpose of this study was to determine the number of oocysts required to infect and/or cause clinical toxoplasmosis in susceptible pigs.

AD-A010 967/8GA PC$3.75/MF$2.25
Rand Corp Santa Monica Calif
Non-Monetary Factors in the Demand for Medical Services: Some Empirical Evidence,
Jan Paul Acton. Nov 74, 34p Rept no. P-5021-2 See also report dated May 73, AD/A-001 987.

Descriptors: *Medical services, *Travel time, New York, Economics, Tables(Data), Mathematical models, Predictions, Requirements, Policies, Urban areas.
Identifiers: Health care delivery systems, *Outpatient services, Ambulatory health care, New York City(New York).

The paper considers the effects of travel distance in determining the demand for medi-

cal services in New York City, an especially good 'laboratory' in which to try to examine the effects of nonmonetary prices because of the long-standing availability of free care in the city's municipal hospitals and clinics. After developing a formal model of the demand for medical services that includes a payment in money and in time for private care, the predictions are tested on a cross-sectional survey of about 2600 users of City hospital out-patient departments.

AD-A011 046/0GA PC$3.75/MF$2.25
Armed Forces Radiobiology Research Inst Bethesda Md
Radionuclide Bone Imaging in the Evaluation of Osseous Allograft Systems.
Scientific rept.,
J. F. Kelly, J. D. Cagle, J. S. Stevenson, and G. J. Adler. Feb 75, 26p Rept no. AFFRI-SR75-4

Descriptors: *Bones, *Surgical transplantation, *Images, *Labeled substances, Scanning, Radioactive isotopes, Healing, Technetium, Mandible, Dogs, Experimental data, Lyophilization.
Identifiers: Radiopharmaceutical agents, *Radioisotope scanning, Nuclear medicine, Evaluation.

Evaluation of the progress of osteogenic activity in mandibular bone grafts in dogs by a noninvasive, nondestructive radionuclide method is feasible. The method provides a meaningful sequential interpretation of osseous repair more sensitive than conventional radiography. It is presumed that accumulating hydroxyapatite is being labelled by the imaging agent technetium diphosphonate. The osseous allograft systems studied were comparable to or exceeded autografts in their repair activity in mandibular discontinuity defects as judged by radionuclide imaging. A lyophilized mandibular allograft segment augmented with autologous cancellous marrow was more active than autograft controls at 3 and 6 weeks and was the most active system studied. Allograft segments augmented with lyophilized crushed cortical allogeneic bone particles were equal to controls at 3 weeks and more active than controls at 6 weeks. Lyophilized crushed cortical allogeneic bone particles retained in a Millipore filter while not clinically stable at 6 weeks did show osteogenic activity equal to control autografts at this interval.

AE-489(Vol.2) PC$13.25/MF$2.25
Aktiebolaget Atomenergi, Studsvik (Sweden).
Bone Mineral Determinations. Proceedings of the Symposium Held in Stockholm--Studsvik, Sweden, 27--29 May 1974. Vol. 2. Presented Papers (Cont.) and Group Discussions.
P. Schmeling. Dec 74, 203p CONF-740566-P2
U.S. Sales Only.

Descriptors: (*Medicine, *Meetings), (*Bone tissues, *Chemical composition), (*Photon transmission scanning, Meetings), Diagnostic techniques, Leading abstract, Measuring methods, Minerals, Osteodensitometry, Patients, Proceedings.

For abstract, see NSA 31 12, number 33571.

NTIS/PS-75/502/5GA PC$25.00/MF$25.00
National Technical Information Service, Springfield, Va.
Preventive Medicine (A Bibliography with Abstracts).
Rept. for 1964-Jun 75,
Elizabeth A. Harrison. Jun 75, 112p*

Descriptors: *Bibliographies, *Preventive medicine, Dentistry, Clinical medicine, Mental disorders, Medical services, Public health, Military medicine, Diagnosis.
Identifiers: Health care delivery systems, Medical research.

The selected citations of Government-sponsored research reports covers the applications of preventive medicine in mental health, dentistry, drug addiction, medical services, medical research, health care delivery systems, military medicine and public health. (Contains 107 abstracts).

NTIS/PS-75/507/4GA PC$25.00/MF$25.00
National Technical Information Service, Springfield, Va.
Computer Technology in Medicine (A Bibliography with Abstracts).
Rept. for 1972-Jun 75,
Pernell W. Crockett. Jun 75, 197p*
Supersedes COM-74-11312.

Descriptors: *Bibliographies, Computers, Diagnosis, Information systems, Medical records, Medical laboratories, Data processing, Systems engineering, Hospitals, Medical services, Physiology, Computerized simulation.
Identifiers: *Medical computer applications, *Computer applications, Biomedical information systems, Health care facilities.

The research includes data on computer applications in medical diagnosis; information systems and medical records; laboratory data processing, systems engineering of health facilities and services; and computerized simulations of physiological processes. (Contains 192 abstracts).

NTIS/PS-75/515/7GA PC$25.00/MF$25.00
National Technical Information Service, Springfield, Va.
Sickle Cell Anemia (A Bibliography with Abstracts).
Rept. for 1964-Jun 75,
Elizabeth A. Harrison. Jun 75, 43p*
Supersedes NTIS/PS-74/114.

Descriptors: *Bibliographies, *Sickle cell anemia, Anemias, Blood diseases, Hereditary diseases, Diagnosis, Therapy, Genetics, Hematology.

The selected abstracts of Federally-sponsored research reports cover the clinical and diagnostic aspects of sickle cell anemia. (Contains 38 abstracts).

NTIS/PS-75/532/2GA PC$25.00/MF$25.00
National Technical Information Service, Springfield, Va.
Health Services in Rural Areas (A Bibliography with Abstracts).
Rept. for 1964-Jun 75,
Elizabeth A. Harrison. Jun 75, 92p*
Supersedes COM-74-11528.

Descriptors: *Bibliographies, *Medical services, *Rural areas, Medical personnel, Telecommunication, Hospitals, Regional planning, Public health.
Identifiers: Medical education, Health care facilities, Health care delivery systems, Emergency medical services, Regional medical programs.

The selected abstracts of Federally-sponsored research reports cover telecommunication, rehabilitation, emergency medical programs, medical education, health care delivery, medical personnel and medical facilities in rural areas. (Contains 87 abstracts).

N75-21935/2GA PC$3.25/MF$2.25
Texas Univ. Health Science Center, Dallas. Dental Branch.
Chemico-Therapeutic Approach to Prevention of Dental Caries.
Final Report, period ending 28 Feb. 1975.
I. L. Shannon. 5 Mar 75, 17p NASA-CR-141762
Contract NAS9-10566

Descriptors: *Chemotherapy, *Fluorides, *Hygiene, *Prophylaxis, *Tooth diseases, Clinical medicine, Dental calculi, Dentistry, Gels, Glycerols, Prevention, Tin compounds.

For abstract, see STAR 1313

PAT-APPL-557 430/GA PC$3.25/MF$2.25
National Aeronautics and Space Administration. Lyndon B. Johnson Space Center, Houston, Tex.
Method and System for in Vivo Measurement of Bone Tissue.
Patent Application.
J. R. Cameron, and P. F. Judy. Filed 11 Mar 75, 24p NASA-CASE-MSC-14276-1
Subm-Sponsored by NASA.
Government-owned invention available for licensing. Copy of application available NTIS.

Descriptors: *Bones, *Radiography, *Tissues (Biology), *X ray density measurement, Attenuation, Diagnosis, Medical equipment, Minerals, *Patent applications, Radiobiology.

Methods and apparatus are provided for radiologically determining the bone mineral content of living human bone tissue independently of the concurrent presence of adipose and other soft tissues. A target section of the body of the subject is irradiated with a beam of penetrative radiations of preselected energy to determine the attenuation of such beam with respect to the intensity of each of two radiations of different predetermined energy levels. The resulting measurements are then employed to determine bone mineral content.

PB-242 027/1GA PC$7.25/MF$2.25
Little (Arthur D.), Inc., Cambridge, Mass.
Financing of Catastrophically Expensive Health Care. Volume I.
Final rept. 23 Jun 71-31 Jan 75.
Jan 75, 210p* NCHSR-75/104
Contract HSM-110-71-197
Paper copy also available in set of two reports as PB-242 026-SET, PC$11.00.

Descriptors: *Health insurance, *Medical services, Tables(Data), Mental disorders, Economic analysis, Costs, Hospitals, Predictions, Evaluation, Analyzing.
Identifiers: Health care delivery systems, *National health insurance plans, Emergency medical services, Government health programs.

The objectives of the study are: (1) analyze the impact of deep coverage health insurance benefits on the American health care system; (2) predict the increase in the demand for medical care resulting from potential growth in the availability of deep coverage benefits; (3) describe methods in which care for catastrophic illness is rationed; and (4) evaluate alternative rationing systems. An actuarial methodology is used to derive estimates of demand. The data base consists of a twenty percent random sample of both high and low option claims from the Federal Employees Government-wide Indemnity Benefit Plan for calendar year 1970. An important implication of the study is that deep coverage health insurance, at a small percentage of total health care expenditures and with likely minimal inflationary effect, would provide to all Americans effective protection against the ever-present risk of severe financial loss from medical catastrophe.

PB-242 028/9GA PC$5.25/MF$2.25
Little (Arthur D.), Inc., Cambridge, Mass.

Financing of Catastrophically Expensive Health Care. Volume 2. Appendixes.
Final rept. 23 Jun 71-31 Jan 75.
Jan 75, 103p* NCHSR-75/105
Contract HSM-110-71-197
Paper copy also available in set of two reports as PB-242 028, PC$11.00.

Descriptors: *Health insurance, *Medical services, Economic analysis, Costs, Hospitals, Evaluation, Predictions, Analyzing.
Identifiers: Health care delivery systems, *National health insurance plans, Government health programs.

Contents:
- Comparison of catastrophic health insurance provisions under various congressional bills and other proposals;
- Comparative racial compositions and occupational and income distribution of domestic U.S. Federal Civil Servants and of the U.S. employed population;
- Derivation of age distribution of wives from that of their husbands;
- Geographical standarization by state of residence;
- Mental and nervous care claims at catastrophic levels by salaried employees and dependents of General Motors Corporation.

PB-242 138/6GA PC$3.25/MF$2.25
Meloy Labs., Inc., Springfield, Va.
Air Pollution Exposure and Immunoglobulin Levels.
Mar 74, 20p* EPA/650/1-75-005
Contract EPA-68-02-0586

Descriptors: *Immunity, Exposure, Air pollution, Health, Respiratory diseases, Serum globulin.
Identifiers: *Cigarette smoking, *Air pollution effects(Humans), *Immunoglobulins, Immunoelectrophoresis.

The objective of the study was to determine whether air pollution affects serum levels of immunoglobulins to a different degree in smokers than in nonsmokers. The sera tested were obtained from army recruits in the Chicago area, 517 smokers and 147 nonsmokers. The smokers and nonsmokers were further categorized by geographic location and by the presence of cough and phlegm. Quantitative determination of levels of IgA, IgG, IgM, and C3 in the samples of sera were by the method of single radial immunodiffusion described by Fahey and McKelvey. The results indicated that no significant differences existed between the mean concentrations of immunoglobulins when smokers were compared to nonsmokers by geographic location, nor were there significant differences between smokers with cough and phlegm and those without.

PB-242 204/6GA PC$8.75/MF$2.25
Stanford Research Inst., Menlo Park, Calif.
A Follow-Up Study of Clients at Selected Alcoholism Treatment Centers Funded by NIAAA.
Final rept.,
W. Lee Ruggels, David J. Armor, and J. Michael Polich. May 75, 295p SRI-URU-3124-FR
NIAAA/NCALI-75-19
Contract NIAAA-ADM-41-74-0008

Descriptors: *Alcoholism, *Rehabilitation, Treatment, Behavior, Males, Social characteristics, Correlations, Research projects.
Identifiers: *Follow up programs, Recidivism, Alcoholism treatment centers.

A follow-up study is reported of over 2,000 persons with various alcohol-related disabilities who had contact with eight alcoholism treatment centers (ATC's) for periods ranging from one day to 18 months. In addition to providing a detailed description of persons served by these ATC's, the report includes analyses showing that about 70 percent of such persons greatly reduced and generally maintained a reduction of alcohol consumption up to 18 months; that the six-months' assessment of male non-DWI clients gives a good indication of their alcohol behavior at stability, and that their behavioral impairment, social class, and social stability, are the best indicators of recovery. It was found that the degree of recidivism varies according to particular client group.

UCRL-76557 PC$4.00/MF$2.25
California Univ., Livermore Lawrence Livermore Lab.
Monodisperse Cell Samples: The Problem and Possible Solutions.
B. H. Mayall. 25 Feb 75, 18p CONF-750415-1

Descriptors: (*Cytology, *Sample preparation), Animal cells, Automation, Gynecology.

For abstract, see NSA 31 12, number 35703.

6F. Environmental Biology

COM-75-10722/7GA PC$4.25/MF$2.25
Texas A and M Univ., Galveston. Dept. of Marine Sciences.
Growth and Maturity of Two Groups of Oysters ('Crassostrea virginica' Gmelin), Maintained in Cooling Water at an Estuarine Electric Power Generating Station.
Gill H. Gilmore, Sammy M. Ray, and David V. Aldrich. Jan 75, 74p TAMU-SG-75-207 NOAA-75050706
Grant NOAA-04-3-158-18

Descriptors: *Oysters, *Fungus diseases, *Ecology, Cooling water, Infectious diseases, Ponds, Electric power plants, Shellfish, Mollusca, Oxygen, Mortality, Water pollution, Estuaries, Tables(Data), Hydrology, Temperature, Growth, Galveston Bay.
Identifiers: *Crassostrea virginica, Sea Grant program, Labrinthomyxa marina, *Thermal pollution, *Water pollution effects(Animals).

Growth and mortality of oysters with high and low levels of Labyrinthomyxa marina (L) infection were measured during 1972 in 0.1 ha ponds receiving a continuous flow of heated water from an electric power plant; the power plant intake canal; and the power plant discharge canal. Pond oysters had less cumulative mortality than intake or discharge canal oysters, regardless of Labyrinthomyxa infection. Only pond oysters (high-L and low-L) gained in biomass (increasing 171 and 5,953 g or 2 and 25%, respectively) by the end of the study. In the intake canal low-L oysters decreased 6,293 g(27%) in the 10-month period prior to their disappearance while high-L oysters decreased 6,633 g (64%) by the end of the study. Oysters placed in the discharge canal during warm weather died within six weeks. Oysters held in the ponds grew as well or better than oysters from a natural reef in Galveston Bay.

CONF-750428-1 PC$4.00/MF$2.25
Puerto Rico Nuclear Center, San Juan.
Some Observations on Pesticide Uses in Puerto Rico and Other Tropical Areas: A Research Prospectus for Pesticide Technology.
A. McB. Block, R. A. Brown, and F. F. Ferguson. 1975, 9p
Contract AT(40-1)-1833

Descriptors: (*Pesticides, *Research programs), (*Tropical regions, *Agriculture), Climates, Fungicides, Herbicides, Insecticides, Parasites, Pest control, Public health, Puerto rico.

For abstract, see NSA 31 12, number 35686.

COO-2003-25 PC$4.00/MF$2.25
Michigan Univ., Ann Arbor Great Lakes Research Div.
Nutrient Enrichment and Eutrophication of Lake Michigan. Progress Report, November 1, 1971--June 30, 1975.
C. L. Schelske. 1975, 19p
Contract AT(11-1)-2003

Descriptors: (*Lake michigan, *Nutrients), (*Plankton, *Photosynthesis), Aquatic ecosystems.

For abstract, see NSA 31 12, number 35687.

NTIS/PS-75/522/3GA PC$25.00/MF$25.00
National Technical Information Service, Springfield, Va.
Eutrophication. Volume 1. 1964-1973 (A Bibliography with Abstracts).
Rept. for 1964-1973,
Elizabeth A. Harrison. Jun 75, 199p*
See also Volume 2, NTIS/PS-75/523.

Descriptors: *Bibliographies, *Water pollution, *Biological productivity, Primary biological productivity, Limnology, Nutrients, Ecology, Sediments, Lakes, Water chemistry, Effluents.
Identifiers: *Eutrophication.

These selected abstracts of Federally-sponsored research reports cover all aspects of eutrophication including research on primary productivity, water chemistry, ecology, the influence and impact of nutrients on lakes and streams, control techniques, and mathematical modeling. (Contains 194 abstracts).

NTIS/PS-75/523/1GA PC$25.00/MF$25.00
National Technical Information Service, Springfield, Va.
Eutrophication. Volume 2. 1974-June 1975 (A Bibliography with Abstracts).
Rept. for 1964-Jun 75,
Elizabeth A. Harrison. Jun 75, 91p*
Supersedes NTIS/PS-74/090. See also Volume 1, NTIS/PS-75/522.

Descriptors: *Bibliographies, *Water pollution, *Biological productivity, Primary biological productivity, Limnology, Nutrients, Ecology, Sediments, Lakes, Water chemistry, Effluents.
Identifiers: *Eutrophication.

These selected abstracts of Federally-sponsored research reports cover all aspects of eutrophication including research on primary productivity, water chemistry, ecology, the influence and impact of nutrients on lakes and streams, control techniques, and mathematical modeling. (Contains 86 abstracts). See also, Eutrophication, Vol. 1. 1964-1973, NTIS/PS-75/522.

PATENT-3 832 461 Not available NTIS
Department of Agriculture, Washington, D.C.
Method for Disrupting Pheromone Communication with cis-7-Dodeceni-1-ol.
Patent,
James H. Tumlinson, III, Everett R. Mitchell, Stella M. Browner, Marion S. Mayer, and Nathan Green. Filed 15 Mar 72, patented 27 Aug 74, 6p PAT-APPL-235 029,
Government-owned invention available for licensing. Copy of patent available Commissioner of Patents, Washington, D.C. 20231 $0.50.

Descriptors: *Patents, *Insect control, *Sex hormones, *Inhibitors, Attractants.
Identifiers: Dodecenol, PAT-CL-424-84, Hormone/exo, Cabbage loopers.

The patent concerns a method for controlling the mating behavior of the cabbage looper which consists of disrupting pheromone communication with a specific inhibitor, cis-7-dodecen-1-ol.

PB-241 788/9GA PC$4.25/MF$2.25
Hazleton Labs. America, Inc., Vienna, Va.
Effects of Inhaling Sulfur Dioxide, Sulfuric Acid, and Fly Ash.
Final rept.
Apr 75, 70p EPRI-RP74

Descriptors: *Flyash, *Air pollution, *Sulfur dioxide, *Sulfuric acid, Physiological effects, Laboratory animals, Monkeys, Exposure, Experimental data, Respiration, Pathology, Guinea pigs, Respiratory system, Histology, Combustion products.
Identifiers: Macaca irus, *Air pollution effects(Animals).

The report presents a brief overall summary of the results of a study to determine the physiological effects of the inhalation of three air pollutants in cynomolgus monkeys (Macaca irus) and guinea pigs. The exposures were conducted 24 hours per day, seven days a week for three 78-week phases in monkeys and four 52-week phases in guinea pigs. The pollutants examined, singly and in binary and ternary combinations were one gas, sulfur dioxide (SO_2), and two particulates, sulfuric acid mist (H_2SO_4), and fly ash. The nominal exposure levels selected were 0.1, 0.5, 1.0, and 5.0 ppm for SO_2, 0.1 and 1.0 mg/cubic meters for H_2SO_4, and 0.1 and 0.5 mg/cubic meters for fly ash. The nominal particle sizes (described in terms of mass median diameters-MMD) selected were less than one micron, and one to five microns for H_2SO_4, and less than five microns for fly ash.

PB-241 818/4GA PC$8.50/MF$2.25
Midwest Research Inst., Kansas City, Mo.
Substitute Chemical Program--Initial Scientific and Minieconomic Review of Malathion.
Mar 75, 262p* EPA-540/1-75-005
Contract EPA-68-01-2448

Descriptors: *Insecticides, *Malathion, Chemical properties, Chemical reactions, Phosphorus organic compounds, Toxicity, Degradation, Residues, Safety, Hazards, Reviews, Cost effectiveness, Chemical analysis, Food, Manufacturing, Utilization.
Identifiers: Water pollution effects(Animals).

The review is an in-depth scientific literature search on the safety and efficacy of substitute chemical registered by EPA as a possible replacement for cancelled or suspended pesticide or pesticides in litigation. This report on Malathion, a pesticide substituting for some uses of DDT, reviews the chemistry and analytical methods, its toxicity to laboratory and domestic animals and to humans, its effects on the environment, and its use patterns, costs and efficacy. The review is a compilation and summarization rather than an interpretation of published and unpublished scientific test and use data from various sources.

PB-242 125/3GA PC$4.25/MF$2.25
New Hampshire Univ., Durham. Jackson Estuarine Lab.
Environmental Requirements of Selected Estuarine Ciliated Protozoa.
Ecological Research series,
Arthur C. Borror. May 75, 57p EPA/660/3-74-031

Descriptors: *Protozoa, *Swamps, *Ecology, Water quality, Tidal currents, Estuaries, Salinity, Hydrogen sulfide, Temperature, Bacteria, pH, Distribution(Property), Indicator species, Oxygen, Tables(Data), Taxonomy, Recommendations, New Hampshire.
Identifiers: Cordgrass, Spartina patens, Spartina alterniflora, Great Bay, *Bioindicators.

Measurements of temperature, pH, oxygen concentration, H_2S concentration, salinity, bacterial concentration, occurrence of micrometazoa, and distribution and abundance of ciliated protozoa were recorded during the summers of 1970 and 1971 in a tidal marsh at Adams Pt., Durham, New Hampshire. Numerous differences in ciliate distribution occurred between the upper (Spartina patens) marsh and the lower (Spartina alterniflora) marsh. Physical and biological parameters of a patens-panne pond were measured during a 2-week period involving the initial flushing of the pool by a session of full moon spring tides. Effects of a full moon spring tide cycle, a neap tide sycle, and a new moon spring tide cycle for one station in the lower marsh were evaluated. During 1970 and 1971, 103 species of ciliates, representing 41 families and 10 orders were identified, including 4 new species of ciliates, representing 41 families and 10 orders were identified, including 4 new species. Several instances of correlations between ciliate abundance and oxygen concentration, H_2S concentration, and salinity were observed.

RLO-2213(Suppl.2) PC$5.45/MF$2.25
Washington State Univ., Pullman Dept. of Zoology.
Ecological Techniques Utilizing Radionuclides and Ionizing Radiation. A Selected Bibliography.
V. Schultz. 1975, 71p
Contract AT(45-1)-2221

Descriptors: (*Ecology, Tracer techniques), (*Tracer techniques, *Bibliographies), Ionizing radiations, Radioisotopes, Radiometric analysis.

For abstract, see NSA 31 12, number 33148.

6G. Escape, Rescue, and Survival

AD-A010 705/2GA PC$3.25/MF$2.25
Coast Guard Research and Development Center Groton Conn
Fire Exposure of Life Rafts.
Final rept.,
Donald J. Kerlin, and E. Kevin O'Connor. Oct 74, 25p Rept no. CGR/DC-2/75 USCG-D-58-75

Descriptors: *Life rafts, *Fire safety, *Merchant vessels, Test methods, Inflatable structures, Ship fires, Burning rate, Storage, Containers, Fire resistant materials, Coast Guard.
Identifiers: Rhode Island vessel, Motor vessels.

The report details the fire research conducted on board the M/V RHODE ISLAND during the week of 25 March 1974. Tests were designed to evaluate the ability of various inflatable life rafts used on commercial vessels to withstand both direct and indirect fire exposure. A number of Coast Guard approved life rafts were subjected to the following fire exposures: (a) direct on-deck exposure; (b) indirect on-deck exposure; (c) direct water surface exposure; and (d) exposure to burning firebrands. The rafts were fitted with thermocouples to measure temperatures at various locations. The rafts and the raft containers performed reasonably well during fire exposure. Certain improvements could be made to the raft container to allow better protection for the raft itself.

AD-A010 867/0GA PC$5.75/MF$2.25
Naval Postgraduate School Monterey Calif
An Analysis of the Need for a Coast Guard Search and Rescue Facility.
Master's thesis,
Kenneth Claude Hollemon. Jun 75, 138p

Descriptors: *Coast Guard, *Search and rescue, *Military facilities, Air sea rescues, Helicopters, Weather, Computerized simulation, Computer programs, Theses, California.
Identifiers: Arcata(California).

This study is a step-by-step process for examining the need and probable effectiveness of new Coast Guard facilities. The vehicle for the study is a proposed Coast Guard Air Station to be located at Arcata, California, but the process is adaptable to any locale or any type of SAR facility. Data from historic SAR incidents was analysed and the SAR environment of the area to be served by the air station was simulated. The study indicated that the air station will reduce response time to maritime SAR incidents 15 to 25 minutes without considering possible delays caused by low visibility at the Arcata airport. Additional study in specific areas was recommended.

6H. Food

COM-75-10556/9GA PC$3.25
Oregon State Univ., Astoria. Seafoods Lab.
Muscle Cathepsins in Three Species of Pacific Sole,
G. M. Geist, and D. L. Crawford. 1974, 7p
ORESU-R-74-010 NOAA-75040709
Grant NOAA-04-3-158-4
Also pub. as Oregon Agricultural Experiment Station, Technical Paper-3617. Pub. in Jnl. of Food Science, v39 1974.

Descriptors: *Peptide hydrolases, *Flood deterioration, *Seafood, Enzymes, Fishes, Muscles, Chemical analysis, Assaying.
Identifiers: Reprints, *Cathepsins, Sea Grant program, *Sole.

Due to the increased speculation about the spoilage effect that cathepsins may exert upon the postmortem quality of fish muscle, an investigation was undertaken with three species of Pacific sole to further explore the validity of this assumption. The species included rex, English, and petrale sole. Partial characterization of the muscle cathepsins in the three species provided information on optimum assay conditions for determining comparative activity. Results indicated that variation in catheptic activity existed between and within species. A flavor panel of 30 judges found no significant difference in the muscle of petrale, rex or English sole that contained high and low levels of catheptic activity.

COM-75-10656/7GA PC$3.75/MF$2.25
Tuna Research Foundation, Terminal Island, Calif.
Survey of Microconstituents in Canned Seafoods and Development of Protective Procedures.
Progress rept. no. 12 (Final), Jul 71-Jun 74.
Nov 74, 29p NOAA-75013102

Descriptors: *Tunas, *Food analysis, Chromatographic analysis, Chemical analysis, Trace elements, Oxygen heterocyclic compounds, Polycyclic compounds, Solvent extraction, Lead(Metal), Mercury, Microanalysis, Arsenic, Aromatic polycyclic hydrocarbons, Phthallates.
Identifiers: *Dibenzodioxin/tetrachloro, *Canned foods.

This final report contains work completed on the development of methodology for the determination of tetrachlorodibezo-p-dioxin in tuna fish. The report also summarizes the development, refinement and modifications of analytical methods for analyses of trace elements and other microconstituents in canned seafoods that were reported in the eleven prior quarterly progress reports.

COM-75-50185-04-05/GA
(Order as COM-75-50185-04)
National Marine Fisheries Service, Gloucester, Mass. Northeast Utilization Research Center.
Low Level Ionizing Radiation and Spice Treatment of Raw, Headless, White Shrimp,
A. N. Roy, and J. D. Kaylor. Apr 75, 6p MFR-Paper-1135 NOAA-75051206-5
Sponsored in part by International Atomic Energy Agency, Vienna (Austria) and National Academy of Sciences-National Research Council, Washington, D.C.
Included in Marine Fisheries Review, v37 n4 p16-20 Apr 75.

Descriptors: *Food irridation, *Food storage, *Seasonings, *Shrimps, Odors, Shellfish, Inorganic salts, Preserving, Bacteria, Food deterioration.

A study was made to determine the storage life of raw, headless, white shrimp treated with ionizing radiation and shrimp treated with turmeric and salt and ionizing radiation. Sensory assessment of irradiated shrimp and shrimp treated with ionizing radiation and turmeric and salt exhibited a storage life of two and four weeks longer, respectively, than nonirradiated shrimp. The spice treatment masks off-odors and flavors caused by irradiation and imparts a spicy odor, inhibits melanosis, and produces a more desirable irradiated product.

COM-75-50185-04-08/GA
(Order as COM-75-50185-04)
National Marine Fisheries Service, Gloucester, Mass. Northeast Utilization Research Center.
Spoilage and Shelf Life Prediction of Refrigerated Fish,
Louis J. Ronsivalli, and Stanley E. Charm. Apr 75, 4p MFR-Paper-1138 NOAA-75051206-8
Prepared in cooperation with New England Enzyme Center, Boston, Mass.
Included in Marine Fisheries Review, v37 n4 p32-34 Apr 75.

Descriptors: *Fishes, *Bacteria, *Food deterioration, Food storage, Temperature, Freezing, Seafood, Preserving, Quality, Predictions.

Two factors, bacteria and temperature, are prominent in the degradation of the quality of refrigerated foods and in the rate that spoilage occurs. Seafoods are among the most perishable of foods, and it is important to study the factors that affect their quality. Previous research by three investigating teams has shown that the spoilage of lean fish occurs at constant rates at temperatures above freezing and that there is a linear relationship between spoilage rate constants and storage temperatures. These findings are useful because they permit researchers and laymen to predict the shelf life of fish for any condition within the limits covered by the research. Mathematical or graphical methods may be used for arriving at the prediction. Also, a device has been developed that simplifies the prediction.

NTIS/PS-75/493/7GA
PC$25.00/MF$25.00
National Technical Information Service, Springfield, Va.
Synthetic Foods (A Bibliography with Abstracts).
Rept. for 1964-Jun 75,
Edward J. Lehmann. Jun 75, 44p*

Descriptors: *Synthetic food, *Bibliographies, Food consumption, Human nutrition, Animal nutrition, Solid waste disposal, Dairy products, Food additives, Cellulose, Sludge, Algae, Feeding stuffs, Proteins, Food processing, Sewage, Food supplements.
Identifiers: Bagasse, *High protein supplements.

This bibliography covers the production and use of synthetic food for both human and animal consumption. These include high protein concentrates, whole foods, and supplements. Most of these foods are the result of synthesis from solid wastes such as cellulose, bagasse, and sludge. The use of algae as a protein source is also discussed. (Contains 39 abstracts). See also NTIS/PS-75/093, Fish Protein Concentrates.

6I. Hygiene and Sanitation

N75-21793/5GA PC$4.25/MF$2.25
Istituto Superiore di Sanita, Rome (Italy). Lab. di Fisica.
Problems in Electric Power Production.
G. Campos, G. Venuti, S. Donelli, S. Frullani, and L. Maiani. 23 Dec 73, 72p ISS-T-73/16 Language in Italian.

Descriptors: *Electric power plants, *Environment pollution, Contaminants, Exhaust gases, Ionizing radiation, Waste disposal.

For abstract, see STAR 1313

6J. Industrial (Occupational) Medicine

AD-A010 589/0GA PC$3.75/MF$2.25
Environmental Health Lab Mcclellan AFB Calif
May Air National Guard Industrial Hygiene Survey.
Final rept.,
Philip Diamond, and William B. Lubinsky. Jan 75, 45p Rept no. EHL-M-75M-1

Descriptors: *Industrial hygiene, *Noise pollution, *Trichloroethylene, Thresholds(Physiology), Solvents, Jobs, Exposure(Physiology), Environments, Hazards, Ultrasonics, Protective equipment.
Identifiers: Recommendations, Evaluation, Degreasing.

The report presents the results of industrial hygiene evaluations conducted at the May Air National Guard installation. The greatest potential health hazard was ultrasonic degreasing in the Pneudraulics Shop. Recommendations and findings are presented for correcting deficiencies in this area and other shops investigated.

ANL-8132 PC$5.45/MF$2.25
Argonne National Lab., Ill.
Argonne National Laboratory Computerized Medical System.
A. B. Long, F. W. Strehl, and B. M. Van Dolah. Oct 74, 149p
Contract W-31-109-Eng-38

Descriptors: (*Anl, Industrial medicine), (*Industrial medicine, *Data processing), Computers, Personnel, Recording systems.

For abstract, see NSA 31 12, number 35677.

6L. Medical and Hospital Equipment

AD-A010 587/4GA PC$3.25/MF$2.25
Environmental Health Lab Kelly AFB Tex
Instrument Corrosion During Sterilization at USAF Hospital, Dyess AFB, Tex.
Technical rept.,
Edward E. LeFebvre, and Samuel A. Britt. May 75, 21p Rept no. EHL(K)-75-5

Descriptors: *Corrosion, *Surgical instruments, Sterilization, Medical equipment, Steam, Autoclaves, Carbon dioxide, Tables(Data), Chemical analysis.
Identifiers: Recommendations.

Pitting and corrosion of surgical instruments during autoclave sterilization has been a problem for the past few years at USAF Hospital, Dyess AFB TX. The USAF Environmental Health Laboratory Kelly responded to an urgent request for analytical service in January 1975 to determine possible causes in the steam and boiler system. Field analysis indicates the problem was most likely to be free carbon dioxide in the steam lines from thermal decomposition of carbonates and bicarbonates found in the boiler feed water. The water softener and dealkalizer were put into operation and a new automatic chemical feed system ordered. A second visit to perform on-site analysis was requested and accomplished in April 1975. The autoclave was found, at that time, to be connected to a 40 psi steam line rather than the recommended 50-80 psi line. Occasional inadequate rinsing of linens during laundering has also contributed to instrument 'spotting.'

NTIS/PS-75/487/9GA
PC$25.00/MF$25.00
National Technical Information Service, Springfield, Va.
Biocompatible Materials. Volume 1. 1964-1973 (A Bibliography with Abstracts).
Rept. for 1964-1973,
Pernell W. Crockett. Jun 75, 152p*
See also Volume 2, NTIS/PS-75/488.

Descriptors: *Bibliographies, *Materials, In vivo analysis, Mechanical organs, Artificial kidneys, Mechanical hearts, Prosthetic devices, Tissues(Biology), Blood, Compatibility, Fabrication.
Identifiers: *Biomaterials, Tissue compatible materials, Blood compatible materials, Surgical supplies.

The cited reports cover studies on the fabrication and preparation of biomaterials, and the in vivo evaluation of the compatibility of the materials to tissues and blood components. Utilization of the materials in mechanical organs, prosthetic devices, implants, and surgical materials is discussed. (Contains 147 abstracts).

NTIS/PS-75/488/7GA
PC$25.00/MF$25.00
National Technical Information Service, Springfield, Va.
Biocompatible Materials. Volume 2. 1974-June 1975 (A Bibliography with Abstracts).
Rept. for 1964-Jun 75,
Pernell W. Crockett. Jun 75, 101p*
Partial revision of COM-74-11126. See also Volume 1, NTIS/PS-75/487.

Descriptors: *Bibliographies, *Materials, In vivo analysis, Mechanical organs, Artificial kidneys, Mechanical hearts, Prosthetic devices, Tissues(Biology), Blood, Compatibility, Fabrication.
Identifiers: *Biomaterials, Tissue compatible materials, Blood compatible materials, Surgical supplies.

The cited reports cover studies on the fabrication and preparation of biomaterials and the in vivo evaluation of the compatibility of the materials to tissues and blood components. Utilization of the materials in mechanical organs, prosthetic devices, impacts, and surgical materials is discussed. (Contains 96 abstracts). See also Biocompatible Materials. Vol. 1. 1964-1973, NTIS/PS-75/487.

NTIS/PS-75/511/6GA
PC$25.00/MF$25.00
National Technical Information Service, Springfield, Va.
Dental Prostheses (A Bibliography with Abstracts).
Rept. for 1964-Jun 75,
Elizabeth A. Harrison. Jun 75, 113p*

See also NTIS/PS-75/512.

Descriptors: *Bibliographies, *Dental prostheses, Prosthetic devices, Dentistry, Adhesives, Rehabilitation, Medical equipment, Medical research, Surgery, Oral diseases, Dental materials, Face(Anatomy).
Identifiers: Oral surgery.

The selected abstracts of Federally-sponsored research reports cover dental research, preventive dentistry, rehabilitation, implantation, biomaterials, dental equipment, oral surgery, cleaning agents and adhesives. (Contains 108 abstracts).

NTIS/PS-75/512/4GA PC$25.00/MF$25.00
National Technical Information Service, Springfield, Va.
Dental Materials and Equipment (A Bibliography with Abstracts).
Rept. for 1964-Jul 75,
Elizabeth A. Harrison. Jun 75, 110p*
See also NTIS/PS-75/511.

Descriptors: *Bibliographies, *Dental materials, *Dental equipment, Medical equipment, Dental supplies, Medical supplies, Dentistry, Composite materials, Adhesives.
Identifiers: Dental cements, Biomaterials.

The selected abstracts of Federally-sponsored research cover adhesives, composite materials, dental supplies, denture base materials, and dental cements. (Contains 105 abstracts). Abstracts on dental prostheses are covered in NITS/PS-75/511, Dental Prostheses.

PAT-APPL-563 378/GA PC$3.25/MF$2.25
Department of Health, Education, and Welfare, Washington, D.C.
One Handed Syringe.
Patent Application,
C. J. McCarthy. Filed 27 Mar 75, 14p DHEW-E-100-74
Government-owned invention available for licensing. Copy of application available NTIS.

Descriptors: *Patent applications, *Medical equipment, *Syringes, Surgery, Injections(Medicine), Vacuum.

The patent application discloses a one-handed, self-contained, light-weight syringe for use in applying suction during a surgical operation. It includes a standardized syringe mounted into a longitudinally cut tube with a wheel attached at a right angle to the tube axis. The surgeon operator, by turning this wheel with his fingers, may operate the syringe and control the amount of suction. The wheet is fastened to a pinion gear which rotates on a fixed shaft causing a rack syringe plunger to move relative to the syringe barrel. This device allows the syringe barrel to move very smoothly and also enables the surgeon-operator complete freedom of one hand.

PAT-APPL-571 214/GA PC$3.25/MF$2.25
Department of Health, Education, and Welfare, Washington, D.C.
Radiation Safety Shield Syringe.
Patent Application,
H. W. Tipton. Filed 24 Apr 75, 11p DHEW-E-160-74
Government-owned invention available for licensing. Copy of application available NTIS.

Descriptors: *Patent application, *Medical equipment, *Syringes, Medical personnel, Patients, Radiation protection, Radioactive materials, Injections(Medicine), Exposure, Shielding.

The patent application discloses a safety apparatus for use in administering radioactive serums by a syringe, without endangering the health and safety of the medical operators. It consists of a sheath and a shield which can be retracted into the sheath to assay the radioactive serum in an assay well. The shield can be moved from the retracted position into an extended position when the serum is to be injected into the patient. To protect the operator, the shield can be constructed of tantalum or any like high density substance to attenuate the radiation, emanating from the radioactive serums contained in the syringe, from passing to the atmosphere.

PATENT-3 882 949 Not available NTIS
Department of Health, Education, and Welfare, Washington, D.C.
Universal Wheelchair for the Severely Disabled.
Patent,
David M. Anderson. Filed 16 Nov 72, patented 13 May 75, 19p PAT-APPL-307 202,
Supersedes PB-219 849.
Government-owned invention available for licensing. Copy of patent available Commissioner of Patents, Washington, D.C. 20231 $0.50.

Descriptors: *Wheel chairs, *Patents, Medical equipment, Human factors engineering, Design.
Identifiers: PAT-CL-180-8-A.

The patent discloses a universal, adjustable-height powered wheelchair for the severely disabled, such as quadriplegic, driver. The wheelchair has a powered elevating mechanism capable of raising the seat and occupant from a height of 6 inches to 26 inches above the ground. It is capable of climbing a 12 inch high curb and may be used while driving any standard-sized two door sedan.

6M. Microbiology:

AD-A010 682/3GA PC$3.25/MF$2.25
New Mexico Univ Albuquerque Dept of Pediatrics
Studies of Streptococcal and Staphylococcal L Forms in Vivo,
Edward A. Mortimer, Jr., Alice H. Cushing, Panida Jayanetra, and George P. Bunch. 1972, 18p
Contract DADA17-67-C-7042, Grant PHS-AI-07501
Availability: Pub. in Streptococci and Streptococcal Diseases, ch25 p433-450 1972.

Descriptors: *Streptococcus, *Staphylococcus, In vivo analysis, Humans, Animals, Osmosis, Lysis, Antibiotics, Cell wall, Mice, Inoculation, Reprints.

L forms of Group A streptococci and coagulase-positive staphylococci were recovered from a variety of clinical and experimental infections in humans and animals, though always in the presence of large numbers of the parent bacterium. Studies designed to examine the mechanism by which they appear have suggested that they represent spontaneously occurring variants that are defended against osmotic lysis by an unidentified substance present in exudate. Experiments designed to demonstrate induction in vivo by the action of anti-cell wall antibiotics yielded negative results, and it was not possible to show that they act as persisting bacterial forms or are infective.

AD-A010 759/9GA PC$3.25/MF$2.25
California Univ Berkeley Naval Biomedical Research Lab
Rhythmic Changes in Dry Heat Resistance of 'Bacillus subtilis' Spores after Rapid Changes in pH,
Robert J. Heckly, and J. Dimatteo. 21 Oct 74, 2p
Availability: Pub. in Applied Microbiology, v29 n4 p565-566 Apr 75.

Descriptors: *Bacillus subtilis, *pH factor, *Resistance(Biology), Rhythm(Biology), Drying, Lyophilization, Spores, Heat resistant materials, Reprints.

Heat resistance of freeze-dried Bacillus subtilis spores varied in a rhythmic manner as a function of time between acidification to about pH 1.5 and freezing. A comparable rapid shift to pH 11 produced little change in resistance to heat. (Author)

COM-75-10544/5GA PC$3.25
Oregon State Univ., Corvallis. Dept. of Food Science and Technology.
Influences of Recovery Media and Temperatures on the Types of Microorganisms Isolated from Seafoods,
J. S. Lee, and D. K. Pfeifer. Nov 74, 7p ORESU-R-74-020 NOAA-75040711
Grant NOAA-04-3-158-4
Also pub. as Oregon Agricultural Experiment Station, Technical Paper-3798. Pub. in Jnl. of Milk and Food Technology, v37 n11 p553-556 Nov 74.

Descriptors: *Food contamination, *Seafood, *Microorganisms, *Culture media, Bacteria, Cultures(Biology), Growth, Temperature, Moraxella, Pseudomonas, Flavobacterium, Cytophaga, Staphylococcus, Micrococcus, Escherichia coli, Vibrio, Arthrobacter.
Identifiers: Reprints, Sea Grant program.

Three commonly employed media for seafoods that represented the NaCl concentrations of 0, 0.5, and 3.0% were examined with microorganisms isolated from seafoods. The identities of microorganisms that grew at 25C but failed to grow at 5, 35, or 37C on any of the media were then determined.

COO-3233-3 PC$4.00/MF$2.25
Brandeis Univ., Waltham, Mass.
Some Aspects of the Mechanism of Bacteriophage Function. Progress Report, February 21, 1974--February 10, 1975.
D. Freifelder. 1975, 7p
Contract AT(11-1)-3233

Descriptors: (*Bacteriophages, *Dna replication), Biological repair, Escherichia coli, Gene recombination, Mutants.

For abstract, see NSA 31 12, number 35690.

PAT-APPL-555 641/GA PC$3.25/MF$2.25
National Aeronautics and Space Administration. Goddard Space Flight Center, Greenbelt, Md.
Improved Method of Detecting and Counting Bacteria.
Patent Application.
G. L. Picciolo, and E. W. Chappelle. Filed 5 Mar 75, 21p NASA-CASE-GSC-11917-2
Government-owned invention available for licensing. Copy of application available NTIS.

Descriptors: *Aqueous solutions, *Bacteria, *Bioassay, *Body fluids, *Physiology, Adenosine triphosphate (Atp), Bioluminescence, *Patent applications.

An improved method is provided for determining bacterial levels, especially in samples of aqueous physiological fluids. The method depends on the quantitative determination of bacterial adenosine triphosphate (ATP) in the presence of nonbacterial ATP. Bacterial ATP is released by cell rupture and is measured by an enzymatic bioluminescent assay. A concentration technique is included to make the method more sensitive. It is particularly useful where the fluid to be measured contains an unknown or low bacteria count.

PATENT-3 872 225 Not available NTIS
Department of Health, Education, and Welfare, Washington, D.C.
Process of Viral Diagnosis and Reagent.
Patent,
John A. Coller, Irving Millman, and Baruch S. Blumberg. Filed 12 Jul 72, patented 18 Mar 75, 22p* PAT-APPL-271 051,
Supersedes PB-232 340.
Government-owned invention available for licensing. Copy of patent available Commissioner of Patents, Washington, D.C. 20231 $0.50.

Descriptors: *Virology, *Hepatitis viruses, *Serology, *Patents, Antigens, Antibodies, Body fluids, Detection, Isotopic labeling, Tests.
Identifiers: PAT-CL-424-1, *Australian antigen, Laboratory diagnosis.

The invention makes possible the diagnosis of the presence of viral moieties, specifically one possible viral moiety, Australia antigen Au(1) and antibody to it (anti-Au(1)) which are associated with hepatitis in human sera, by radioactively labeling the Au(1) moiety, as an indicator, with a radioactive element, preferably radioactive iodine. By incubating anti-Au(1), a portion of the reactants may form a complex. The degree to which a complex is formed as a function of the reactants can be determined by separation between complexed and non-complexed radioactivity. Portions of this document are not fully legible.

PB-242 339/0GA PC$4.25/MF$2.25
Auburn Univ., Ala. Water Resources Research Inst.
Spectral Studies of Moniliformin and Aflatoxin B1.
Master's thesis,
John Allen Lansden. 12 Dec 73, 60p W75-08475, OWRT-A-035-ALA(3)

Descriptors: *Visible spectra, *Fungi, *Spectroscopic analysis, *Ultraviolet spectra, Quantum efficiency, Fluorescence, Phosphorescence, Desoxyribonucleic acids, Volumetric analysis, Toxins and antitoxins, Plant diseases, Molecular energy levels, Electron transitions, Vibrational energy levels.
Identifiers: *Corn blight, *Mycotoxins, Intersystem crossing(Electrons), *Aflattoxins, *Moniliformin.

The spectroanalytical parameters of moniliformin were investigated. The fluorescence and phosphorescence spectra were reported as well as the quantum efficiency of fluorescence and the phosphorescence lifetime. An hypothesis was expounded to explain anomalies occurring in the work. The interaction of desoxynucleic acid (DNA) with moniliformin was investigated using fluorescence titration techniques. Moniliformin was found to interact with a linear dependency on the concentration of DNA. Interactions of bovine serum albumin and nucleic acid histone with moniliformin were not observed. The triplet-triplet absorption spectrum of aflatoxin B1 was reported using kinetic flash techniques. The T-T absorption bands in aflatoxin B1 were assigned. Investigation of triplet-triplet absorption spectra for monilliformin was also performed and negative results were reported.

PB-242 341/6GA PC$6.25/MF$2.25
Alabama Univ., Birmingham.
Distribution, Cultivation and Chemical Destruction of 'Gallionella' from Alabama Ground Water.
Master's thesis,
Robert D. Christian, Jr. 1975, 159p W75-08479, OWRT-B-045-ALA(1)
Contract DI-14-31-0001-3855

Descriptors: *Hydrogeology, *Bacteria, *Water pollution, *Ground water, Disinfectants, Ecology, Alabama, Water treatment, Distribution(Property), Theses, Cultivation, Contamination, Ammonium compounds, Physiology, Growth, Iron sulfides, Microbiology, Water wells.
Identifiers: *Gallionella, *Iron bacteria, Mine acid drainage.

Results of hydrogeologic and microbiologic studies were combined to determine the ecology of the iron bacteria, Gallionella, in water systems in Alabama and to find a chemical cure for water wells contaminated with this organisms. Treatment of laboratory strains of Gallionella with disinfectants indicated that a chemical cure is possible; however, only field experiments can determine if permanent cures occur. Success in the future will probably depend on the effectiveness of quaternary ammonium compounds which have several advantages over chlorine compounds.

SAND-75-0052 PC$4.25/MF$2.25
Sandia Labs., Albuquerque, N.Mex.
Dry Heat Induction of Auxotrophic Mutants in Bacillus Subtilis Var. Niger Spores: A Preliminary Report.
R. T. Dillon, and M. B. Conley. Feb 75, 21p
Contract AT(29-1)-789

Descriptors: (*Bacillus subtilis, *Mutants), Biological effects, Heat, Temperature dependence.

For abstract, see NSA 31 12, number 35702.

TT-74-53267 PC$3.25/MF$2.25
Agricultural Research Service, Washington, D.C.
Increase of Virulence of Entomopathogenic Fungi dur to Chemical and Physical Factors (Experimentalnoe Povyshenie Virulentnosti Entomopatogennych Gribov Putem Vozdeicivlya Chimicheskimi i Physieheskimi Factorami),
A. A. Evlakhova. 1975, 16p
Trans. of Moskovskoe Obshchestvo Ispytatelei Prirody. Trudy (USSR) v22 p257-262 1966. Sponsored in part by National Science Foundation, Washington, D.C. Special Foreign Currency Science Information Program.

Descriptors: *Fungi, *Mutagens, Mutations, Stability, X rays, Gamma rays, Ionizing radiation, Chemical compounds, Vaccines, Microorganisms, Translations, USSR.

Data obtained on selection of fungi with increased virulence with use of chemical and physical factors are presented. After exposure of enthomopathogenic fungus Beauveria bassiana (Bals.) Vuill. to some chlororganic insecticides as well as to X-rays and gamma-rays from Co60 there were obtained stable variants with increased virulence not disappearing in subculture up to 12 generations. Role of dose and intensity of ionizing radiation in induction of morphological mutations was revealed.

6N. Personnel Selection and Maintenance (Medical)

AD-A010 588/2GA PC$3.25/MF$2.25
School of Aerospace Medicine Brooks AFB Tex
Ocular Hypertension and Chronic Open-Angle Glaucoma in USAF Pilots and Navigators.
Progress rept. 1958-1973,
James L. Mims, III, and Thomas J. Tredici. Dec 74, 18p Rept no. SAM-TR-74-48

Descriptors: *Hypertension, *Eye diseases, *Aviation medicine, Pilots, Ophthalmology, Aging(Physiology), Visual defects, Chemotherapy, Epinephrine, Physical fitness, Aviation personnel.
Identifiers: *Glaucoma.

Records from the United States Air Force glaucoma screening and management program for flying personnel were surveyed to obtain long-term followup information and age-specific prevalences for this population. Untreated ocular hypertensives with tensions of 22-29 with no visual field loss were labeled 'preglaucoma'; ocular hypertensives without field loss and treated with epinephrine (for tensions above 29 or for other reasons) were labeled 'glaucoma.' Those requiring other drugs and those with field loss were disqualified from flying. Questionnaires to ophthalmologists caring for retired men indicated that 1 of the 39 preglaucomas followed 8 years and 2 of the 27 glaucomas followed 7 years had lost visual field. Among ocular hypertensives screened from 15,804 men, ages 40-54, in 1970, only 5 had visual field loss presumed glaucomatous.

6O. Pharmacology

AD-A010 665/8GA PC$3.25/MF$2.25
Edgewood Arsenal Aberdeen Proving Ground Md
The Cholinergic System and Nociception in the Primate: Interactions with Morphine.
Technical rept. Jul 72-Sep 73,
Agu Pert. May 75, 17p Rept no. EB-TR-74093

Descriptors: *Cholinergic blocking agents, *Morphine, *Drugs, *Pain, Analgesics, Dosage, Nerves, Interactions, Pharmacology, Shock(Pathology), Primates, Thresholds(Physiology), Experimental data.
Identifiers: Psychoneuropharmacology.

In experiment 1, the shock titration task was used to evaluate the antinociceptive properties of five different classes of cholinergic compounds in the Rhesus monkey. It was found that only scopolamine and high doses of physostigmine were effective in elevating the shock threshold. The apparent antinociceptive effect of physostigmine, however, was difficult to separate from its nonspecific behavioral depressant effect and was probably not related to an increase in cholinergic tone. Experiment 2 examined the interaction of morphine with arecoline, scopolamine, and physostigmine. Only scopolamine (0.05 and 0.1 mg/kg) and high doses of physostigmine (0.1 mg/kg) interacted with morphine in the shock titration paradigm. The multiplicative interaction of morphine with scopolamine was confirmed in experiment 3 over a wider range of doses. It was concluded that morphine and the cholinergic compounds produce antinociceptive effects through different mechanisms of the pain system.

NTIS/PS-75/489/5GA
PC$25.00/MF$25.00
National Technical Information Service, Springfield, Va.
Psychotropic Drug Research (A Bibliography with Abstracts).
Rept. for 1964-May 75,
Pernell W. Crockett. Jun 75, 119p*

Descriptors: *Bibliographies, *Psychoneuropharmacology, *Psychotherapeutic agents, *Drugs, CNS depressants, CNS stimulants, General anesthetics, Hallucinogenic drugs, Hypnotics and sedatives, Tranquilizer drugs.
Identifiers: *Psychotropic agents.

Reserch reports are presented on the pharmacology of hypnotics and sedatives, anesthetics, tranquilizers, alcohols, amphetamines, caffeine, and hallucinogens. (Contains 114 abstracts). See also NTIS/PS-75/147, Drug Abuse.

NTIS/PS-75/509/0GA PC$25.00/MF$25.00
National Technical Information Service, Springfield, Va.
Antineoplastic Agents (A Bibliography with Abstracts).
Rept. for 1970-Jun 75,
Pernell W. Crockett. Jun 75, 200p*
Supersedes COM-74-10105.

Descriptors: *Bibliographies, *Antineoplastic agents, *Toxicology, *Pharmacology, Drugs, Malignant neoplasms, Bioassay, Laboratory animals, Dosage, Dose rate, Evaluation.
Identifiers: Cancer.

The citations cover research on the pharmacology and toxicology of antineoplastic agents. (Contains 195 abstracts).

PB-242 124/6GA PC$3.75/MF$2.25
State Univ. of New York, Buffalo.
Pharmacokinetics of Toxic Elements in Rainbow Trout. Uptake, Distribution and Concentration of Methylmercury by Rainbow Trout (Salmo gairdneri) Tissues. II. The Mechanism of Methylmercury Transport and Transfer to the Tissues of the Rainbow Trout (Salmo gairdneri).
Ecological research series,
Edward J. Massaro. Dec 74, 39p EPA/660/3-74-027
Grant EPA-R-800989

Descriptors: *Trout, *Mercury organic compounds, Absorption(Biological), Fishes, Tissues(Biology), Histology, Metabolism, Recommendations, In vitro analysis, In vivo analysis, Experimental data, Pharmacology.
Identifiers: *Salmo gairdneri, Rainbow trout, Mercury/methyl, *Bioaccumulation.

It has been known for some time that fishes are able to take up organic mercury from their environment and concentrate it in their tissues to levels that are toxic to humans. The research is directed toward elucidating the mechanisms of organic mercury concentration in the tissues of the rainbow trout, Salmo gairdneri. Attention is focused on establishing the relative affinities of the various tissues of this species for methylmercury; that is, the capacity of the tissues to take up, concentrate and store MeHg, and the half-retention time of this compound in the tissues.

6P. Physiology

AD-A010 649/2GA PC$3.25/MF$2.25
Texas Univ Southwestern Medical School At Dallas
Antibody Formation and Immunity.
Final progress rept. 1 Aug 72-31 Jul 73,
Jonathan W. Uhr. Dec 74, 12p
Contracts DADA17-72-C-2145, DADA17-69-C-9177

Descriptors: *Immunity, *Antibodies, Biosynthesis, Immunoglobulins, Immunization, Hypersensitivity, Cells(Biology), Lymphocytes, Response(Biology), Stimulation(Physiology), Antigens.
Identifiers: B cells.

The major objective of the studies has been to understand the molecular and cellular mechanisms underlying induction of immunity. The studies suggest that residual antigen is a major driving force for the immune response that that serum antibody can interact with such residual antigen and suppress the stimulation. It was found that IgG antibody is more effective than IgM antibody in suppression. The nature of immunologic memory was extensively studied and it was found that IgM-immunologic memory is short-lived in contrast to IgG-memory. The molecular basis of antibody formation was studied using normal lymphoid tissue as well as clones of murine myeloma cells. The sites of synthesis and intracellular transport of immunoglobulin in plasma cells was elucidated. The final phase of the work led to an examination of the antibody receptors on B cells.

FMI-1000-588 PC$4.00/MF$2.25
Chicago Univ., Ill. Dept. of Medicine.
Lysosomal and Neutral Hydrolase Activity During the Regression of Cardiac Hypertrophy.
A. F. Cutilleta, M. K. Reddy, R. T. Dowell, R. Zak, and M. Rabinowitz. 14p CONF-7309136-1

Descriptors: (*Heart, *Physiology), (*Enzymes, *Biochemical reaction kinetics), Biological effects, Biological recovery, Injuries, Rats.

For abstract, see NSA 31 12, number 35691.

FMI-1000-590 PC$4.00/MF$2.25
Franklin McLean Memorial Research Inst., Chicago, Ill.
Purification and Properties of Erythropoietin: A Critical Review.
E. Goldwasser. 18p CONF-740850-1

Descriptors: (*Erythropoietin, *Biological effects), Hematopoietic system, Physiology, Purification.

For abstract, see NSA 31 12, number 35692.

NTIS/PS-75/508/2GA PC$25.00/MF$25.00
National Technical Information Service, Springfield, Va.
Cryobiology (A Bibliography with Abstracts).
Rept. for 1964-Jun 75,
Elizabeth A. Harrison. Jun 75, 111p*

Descriptors: *Bibliographies, *Cryobiology, Blood preservation, Surgical transplantation, Cryogenics, Low temperature research.
Identifiers: *Cryopreservation, *Cryoprotective agents, *Cryosurgery, *Cryotherapy.

These selected abstracts of Federally-sponsored research reports cover blood preservation, surgical transplantation, cryogenics, cryopreservatives, cryoprotective agents, cryosurgery, low temperature research and cryotherapy. (Contains 106 abstracts).

NTIS/PS-75/526/4GA PC$25.00/MF$25.00
National Technical Information Service, Springfield, Va.
Electroretinography (A Bibliography with Abstracts).
Rept. for 1964-Jun 75,
Pernell W. Crockett. Jun 75, 92p*

Descriptors: *Bibliographies, *Electroretinography, Electrophysiology, Retina, Eye(Anatomy), Physiology, Dark adaptation, Color vision, Visual perception, Radiation effects.
Identifiers: Visual evoked responses.

Research reports are cited on the use of electroretinography to study physiological processes of the eye. Included are studies on dark adaptation, color vision, visually evoked responses, visual performance, and radiation effects. (Contains 87 abstracts).

N75-21931/1GA PC$3.75/MF$2.25
Kanner (Leo) Associates, Redwood City, Calif.
The Thermoregulatory System: Regulated System or Servo System .
Y. Houdas, and J. D. Guieu. 29 Apr 75, 37p
NASA-TT-F-16256
Contract NASW-2481

Tran-Transl. Into English from Arch. Sci. Physiol. (France), V. 27, 1973 p A311-A338.

Descriptors: *Control theory, *Servocontrol, *Thermoregulation, Body temperature, Models, Set theory, Temperature control.

For abstract, see STAR 1313

PB-242 202/0GA PC$3.75/MF$2.25
Medical Coll. of Wisconsin, Milwaukee. Dept. of Environmental Medicine.
Summary Results of Research Directed Toward Eliciting Effects of Exposure to Carbon Monoxide on the Spontaneous Electroencephalogram and Visual Evoked Cortical Electrical Activity.
Final rept.
14 Aug 74, 36p MCOW-ENVM-CO-74-3 CRC-APRAC-CAPM-3-68-7

Descriptors: *Carbon monoxide, *Electroencephalography, Air pollution, Exposure, Central nervous system, Electrophysiology, Brain, Humans.
Identifiers: *Visual evoked response, Air pollution effects(Humans), Carbonylhemoglobin.

The spontaneous electroencephalogram (EEG) and the visual evoked cortical electrical activity (visual evoked response, VER) were studied in young adult males to ascertain the effects of exposure to carbon monoxide (CO). The EEG was found to be generally resistant to change during eight hours of exposure at the lower CO concentrations (maximum carboxyhemoglobin saturations of 10 and 22 percent). During the eight hour exposures, the VER was generally resistant to change until COHb levels of 22 percent were achieved, while with 24 hours of exposure changes were evident even at the lowest concentrations (COHb equals 4-10 percent). This change, an increase in VER wave amplitude, suggest that these exposures induced central nervous system depression.

PB-242 266/5GA PC$5.25/MF$2.25
Ohio State Univ., Research Foundation, Columbus.
The Interactive Effects of Carbon Monoxide and Alcohol on Driving Skills.
Final rept.,
T. J. Rockwell, and F. W. Weir. Jan 75, 121p
CRC-APRAC-CAPM-9-69-3

Descriptors: *Motor vehicle operators, *Driver performance measures, *Carbon monoxide, Alcoholism, Air pollution, Ethanols, Blood chemical analysis, Road tests, Behavior, Abilities, Performance tests, Reaction time, Thresholds(Perception).
Identifiers: Blood alcohol levels, Carbonylhemoglobin, *Air pollution effects(Humans), *Alcohol ingestion.

The objective of the study was to determine the combined effects of carbon monoxide and alcohol (ethanol) on driving performance in normal driving tasks, and to establish 'bench marks' of performance and equivalence levels for comparing carboxyhemoglobin (percent of hemoglobin combined with carbon monoxide) effects to corresponding blood alcohol effects on driving performance.

6R. Radiobiology

AD-A011 044/5GA PC$3.75/MF$2.25
Armed Forces Radiobiology Research Inst Bethesda Md
Primate Physical Acitivity Following Exposure to a Single 2000-Rad Pulsed Dose of Mixed Gamma-Neutron Radiation.
Scientific rept.,
C. R. Curran, and C. G. Franz. Dec 74, 43p Rept no. AFRRI-SR74-29

Descriptors: *Radiation effects, *Radiobiology, *Ionizing radiation, Monkeys, Laboratory animals, Experimental data, Behavior, Performance(Human), Physiological effects, Radiation dosage.
Identifiers: Macaca mulatta.

Twelve male rhesus monkeys (Macaca mulatta) were trained to perform one of the following tasks: discrete trial, cued avoidance; shock motivated physical activity; or a combined cued avoidance-physical activity task. All tests were conducted in a primate physical activity wheel developed at the AFRRI. The animals were exposed to a single 2000-rad pulsed dose of mixed neutron-gamma radiation. All animals performing the physical activity task experienced periods of early transient incapacitation within the first seven minutes of postirradiation testing. Only one of the animals performing the cued avoidance task experienced an early transient incapacitation. The animals performing the combined task experienced periods of early transient incapacitation on the physical activity task but not on the cued avoidance task. The recovery period performance level of each of the animals performing the physical acitvity task was also significantly lower than the performance of any animal performing the cued avoidance task.

AD-A011 045/2GA PC$3.25/MF$2.25
Armed Forces Radiobiology Research Inst Bethesda Md
Postirradiation Vomiting.
Scientific rept.,
G. R. Middleton, and R. W. Young. Oct 74, 23p
Rept no. AFRRI-SR74-23

Descriptors: *Radiation effects, *Radiobiology, *Emesis, Ionizing radiation, Monkeys, Experimental data, Laboratory animals, Exposure(Physiology), Physiological effects, Radiation dosage, Visual perception.

One hundred and twenty-nine male rhesus monkeys (Macaca mulatta) exposed to prompt radiations (neutron/gamma = 0.4 and pulse width = 50 msec) ranging from 700 to 5600 rads (midhead dose) were analyzed for incidence of vomiting. The animals were fasted 18 hours preexposure and observed for incidence of vomiting for two hours postexposure. For doses less than 1000 rads, the number of animals that vomited increased directly with dose. Above 1000 rads, the number of animals that vomited decreased with increasing dose. The total number of vomitions per dose group followed a nearly identical pattern to the incidence of emesis. In all dose groups most of the emetic episodes occurred between 20 and 50 minutes postirradiation.

BARC-748 PC$4.50/MF$2.25
Bhabha Atomic Research Centre, Bombay (India). Health Physics Div.
Plutonium in Human Lungs: Assessment with Thin NaI(Tl) Detector Systems.
R. C. Sharma, S. Somasundaram, T. Surendran, D. K. Kapur, and S. P. Garg. 1974, 29p
U.S. Sales Only.

Descriptors: (*Plutonium, *Radiation monitoring), (*Americium, Radiation monitoring), (*Lungs, *Radioactivity), Chest, Dusts, Man, Phantoms, Scintillation counters.

For abstract, see NSA 31 12, number 33539.

BNL-50418 PC$10.60/MF$2.25
Brookhaven National Lab., Upton, N.Y.
Interaction of Radiation and Host Immune Defense Mechanisms in Malignancy, March 23--27, 1974, White Sulphur Springs, West Virginia.
1974, 411p CONF-740331-

Descriptors: (*Immune reactions, *Biological radiation effects), (*Neoplasms, Biological radiation effects), Leading abstract, Meetings.

For abstract, see NSA 31 12, number 33479.

COO-3095-13 PC$4.00/MF$2.25
Albert Einstein Medical Center, Philadelphia, Pa. Dept. of Genetics.
Ultraviolet Light Effects on Nucleic Acid Formation and Genetic Events in Bacteria. Final Progress Report, August 1, 1971--July 31, 1974.
C. O. Doudney. 1974, 16p
Contract AT(11-1)-3095

Descriptors: (*Dna replication, *Biological radiation effects), (*Escherichia coli, *Genetic radiatio effects), (*Mutations, *Radioinduction), Antibiotics, Biological repair, Biosynthesis, Chloramphenicol, Inhibition, Irradiation, Proteins, Ultraviolet radiation.

For abstract, see NSA 31 12, number 33380.

LA-UR-75-253 PC$4.00/MF$2.25
Los Alamos Scientific Lab., N.Mex.
Biological Effects of the Los Alamos Meson Beam on Cells in Culture.
M. R. Raju, J. F. Dicello, T. T. Trujillo, and M. M. Kligerman. 1975, 17p CONF-741230-2
Contract W-7405-eng-36

Descriptors: (*Animal cells, *Biological radiation effects), (*Oxygen, *Radiosensitivity effects), (*Pions minus, *Oxygen enhancement ratio), Cell cultures, Meson beams, Rbe, Survival curves, Survival time.

For abstract, see NSA 31 12, number 33406.

LA-5883-PR PC$7.60/MF$2.25
Los Alamos Scientific Lab., N.Mex.
Biomedical and Environmental Research Program of the Lasl Health Division. Annual Report, January--December 1974.
E. C. Anderson, and E. M. Sullivan. Feb 75, 165p
Contract W-7405-ENG-36

Descriptors: (*Radiobiology, *Research programs), (*Industrial medicine, Research programs), (*Environment, Research programs), (*Molecular biology, Research programs), Animal cells, Biochemistry, Biophysics, Electronic equipment, Lasl, Leading abstract, Mammals.

For abstract, see NSA 31 12, number 33486.

LA-tr-75-6 PC$4.50/MF$2.25
Statens Straalskyddsinstitut, Stockholm (Sweden).
Radiation Dose Received by Humans from Intravenously Administered Sodium Selenite Marked with Selenium-75.
R. Falk, and J. C. Lindhe. 1972, 30p SSI-1974-011
Translation of straldosen till maenniska fran intra-venoest Administrerad natriumselenit maerkt md selen-75.

Descriptors: (*Selenium 75, *Retention), (*Blood, *Radionuclide kinetics), (*Kidneys, Radionuclide kinetics), (*Liver, Radionuclide kinetics), Biological half-life, Excretion, Man, Methionine, Radiation doses, Selenites.

For abstract, see NSA 31 12, number 33540.

NIRS-13 PC$7.25/MF$2.25
National Inst. of Radiological Sciences, Chiba (Japan).
Annual Report, 1973.
Sep 74, 82p
U.S. Sales Only.

Descriptors: (*Environment, *Research programs), (*Medicine, Research programs), (*Genetics, Research programs), (*Physiology, Research programs), Biochemistry, Biophysics, Chemistry, Cytology, Japan, National organizations.

For abstract, see NSA 31 12, number 33487.

NP-20366 PC$5.25/MF$2.25
Medical Research Council, London (UK).
Toxicity of Plutonium.
1975, 43p
U.S. Sales Only.

Descriptors: (*Plutonium 239, *Safety standards), Age dependence, Biological hot spots, Biological radiation effects, Bone tissues, Dose commitments, Dose equivalents, Dosimetry, Icrp, Lungs, Lymph vessels, Maximum permissible dose, Maximum permissible intake, Radiation doses, Radiation hazards, Skeleton, Toxicity.

For abstract, see NSA 31 12, number 33541.

ORO-4257-3 PC$4.00/MF$2.25
North Carolina Univ., Chapel Hill School of Medicine.
Chest Fluoroscopy and Neoplasia in Tuberculosis Patients: A Retrospective Survey. Progress Report, 1973--1974.
M. C. Battigelli. 1974, 12p
Contract AT(40-1)-4257

Descriptors: (*Fluoroscopy, *Radiation hazards), (*Patients, *Neoplasms), Chest, Data acquisition, Data processing, Radioinduction, Tuberculosis.

For abstract, see NSA 31 12, number 33446.

ORO-4568-2 PC$4.00/MF$2.25
Tennessee Univ., Knoxville.
Alterations Induced by X-Rays and Ultraviolet Light on the Synthesis and Maintenance of Macromolecular Components within Cells. Progress Report, March 1, 1974--March 1, 1975.
D. Billen. 1975, 9p
Contract AT(40-1)-4568

Descriptors: (*Dna replication, *Biological radiation effects), (*Bacillus subtilis, Dna replication), (*Escherichia coli, Dna replication), Biochemical reaction kinetics, Biological effects, Biological repair, Biosynthesis, Dna, Molecular biology, Polymerases, Radiation injuries, Toluene, X radiation.

For abstract, see NSA 31 12, number 33413.

PB-242 278/0GA PC$3.75/MF$2.25
Institute for Defense Analyses, Arlington, Va.
Estimates of Increase in Skin Cancer Incidence with Time Following a Decrease in Stratospheric Ozone.
Final rept.,
Pythagoras Cutchis. Feb 75, 33p P-1089
DOT/TST-75-91
Contract DOT-OS-30057

Descriptors: *Skin cancer, *Ultraviolet radiation, *Ozonosphere, *Radiation effects, Ozone, Radiation dosage, Exposure, Humans, Malignant neoplasms, Predictions, Epidemiology, Linear regression.
Identifiers: DOT/4GZ/GA, DOT/5H, DOT/5I, Dallas(Texas).

Estimates of skin cancer incidence resulting from a sudden reduction of stratospheric ozone have been made recently that are based on uncertain epidemiological data. This report shows that these estimates should be interpreted as saturation values that would not be realized

until many decades have elapsed subsequent to the assumed UV perturbation resulting from the ozone reduction. Similarly, many decades would be required before skin cancer incidence rate is restored to the unperturbed rate following removal of the perturbing agent. Calculations for the growth of skin cancer incidence with time are made in which skin cancer incidence is assumed to be a linear function of either accumulated lifetime or adult dose, and several step-function models for the UV perturbation are investigated. The computations are specifically made for Dallas, Texas, but the results should also be applicable to other cities and the United States as a whole.

SAAS-170 PC$6.25/MF$2.25
Staatliches Amt fuer Atomsicherheit und Strahlenschutz, Berlin (German Democratic Republic).
Radiation Protection in Pediatric X-Ray Diagnostics in the Gdr.
W. Koenig, B. Menzel, H. Friedrich, and P. Taschner. Nov 74, 64p
In German.

Descriptors: (*Pediatrics, Biomedical radiography), (*Biomedical radiography, *Radiation hazards), (*Children, *Radiation protection), German democratic republic, X radiation.

For abstract, see NSA 31 12, number 33450.

6S. Stress Physiology

AD-A010 673/2GA PC$8.50/MF$2.25
Advisory Group for Aerospace Research and Development Paris (France)
Vibration and Combined Stresses in Advanced Systems.
Conference proceedings,
Henning E. von Gierke. Mar 75, 260p Rept no. AGARD-CP-145
Papers presented at the Aerospace Medical Panel Specialists' Meeting, held at Oslo, Norway, 22-23 April 1974. NATO furnished.

Descriptors: *Stress(Physiology), *Vibration, *Meetings, Flight crews, Exposure(Physiology), Aerospace medicine, Norway, Human factors engineering, Performance(Human), Environments, Biodynamics, Wounds and injuries, Models, Response(Biology), Aircraft, Ground vehicles, NATO.
Identifiers: Recommendations.

The volume contains the 28 presentations and related discussions presented at the AGARD Aerospace Medical Panel Specialists' Meeting on 'Vibration and Combined Stresses in Advanced Systems' held at Oslo, Norway, 22-23 April 1974. The papers cover operational vibration environments and their effects on the capabilities of the crew of aircraft, land vehicles and ships; the physiological effects and potential injuries resulting from short term as well as chronic vibration exposure; the performance effects of vibration and combined stresses; biodynamic models to explain and predict responses to vibration; and finally vibration exposure standards for practical use. Related subjects such as exposure to infrasound and tactile communication are also covered. A technical evaluation by the editor summarizing the main findings and conclusions and outlining future requirements and recommendations completes the proceedings.

AD-A011 097/3GA PC$3.25/MF$2.25
Clarkson Coll of Technology Potsdam N Y Dept of Mechanical and Industrial Engineering
Three-Dimensional Human Display Model.
Technical rept. Feb 74-Jul 75,
Tom E. Potter, and Kenneth Willmert. Jul 75, 48p Rept no. MIE-010
Contract N00014-70-A-0311-0003

Descriptors: *Display systems, *Impact, *Biodynamics, *Human body, *Computer graphics, Three dimensional, Mathematical models, Simulation, Motor vehicle accidents, Motion.
Identifiers: Three dimensional display systems, *Computerized simulation.

A two-dimensional computer graphic display of a three-dimensional human model has been developed. The major body segments of the model are represented as non-uniform elliptic cylinders. The shadow outlines of these cylinders are displayed on the terminal screen and connected by circular arcs and straight lines to produce a realistic representation of a human being in any position. The human model was developed for the display of results of three-dimensional simulation programs which calculate the position of an occupant during vehicle impact. However, it is well suited to any other type of human motion. It allows the user to select the viewing orientation and was designed for low cost computer and graphic terminal systems.

JPRS-64785 PC$3.25/MF$2.25
Joint Publications Research Service, Arlington, Va.
Preserving Performance Capacity of Ship Crews on the Open Sea,
V. N. Barnatskii, N. G. Balakin, N. I. Vikhrov, D. P. Komarova, and A. G. Kuznetsov. 16 May 75, 12p
Trans. of Sovetskaya Meditsina (USSR) n4 p128-131 1974.

Descriptors: *Motion sickness, *Ocean environments, Stress(Physiology), Dietetics, Countermeasures, Storms, Injections(Medicine), Translations, Sodium carbonates, Prophylaxis, Experimental data, USSR, Resistance.
Identifiers: Seasickness.

The report contains a study of the effects of varying grades of tossing in stormy conditions in the North Atlantic and the North Sea on a caloric diet that insured sufficient quantities of proteins, fats and carbohydrates but which was unbalanced in terms of its mineral content.

N75-21928/7GA PC$3.25/MF$2.25
Texas Univ. Health Science Center, Dallas. Pauline and Adolph Weinberger Lab. for Cardiopulmonary Research.
Cardiovascular Effects of Variations in Habitual Levels of Physical Activity.
Final Technical Report.
C. G. Blomqvist, and J. H. Mitchell. 22 Apr 75, 9p NASA-CR-142616
Contract NGR-44-012-151

Descriptors: *Cardiovascular system, *Physical exercise, *Physiological effects, Aerospace medicine, Space flight stress, Stress (Physiology).

For abstract, see STAR 1313

N75-21929/5GA PC$3.25/MF$2.25
Scientific Translation Service, Santa Barbara, Calif.
Variations in Internal Temperature and Heart Rate as a Function of Metabolism and Environment During Positive and Negative Work.
F. A. Missenard. Apr 75, 10p NASA-TT-F-16260
Contract NASW-2483
Tran-Transl. Into English from Arch. Sci. Physiol. (Paris), 1973 p A263-269.

Descriptors: *Ambient temperature, *Heart rate, *Metabolism, Environment effects, Physical work, Rectum.

For abstract, see STAR 1313

N75-21930/3GA PC$3.75/MF$2.25
Defence and Civil Inst. of Environmental Medicine, Downsview (Ontario). Biosciences Div.
Changes in Body Composition During an Arctic Winter Exercise.
W. J. Ohara, and C. L. Allen. Nov 74, 32p
DCIEM-74-R-1061

Descriptors: *Arctic regions, *Body composition (Biology), *Human performance, *Physical work, Cold weather tests, Human tolerances, Metabolism, Stress (Physiology), Thermoregulation, Urinalysis.

For abstract, see STAR 1313

N75-21932/9GA PC$3.25/MF$2.25
Kanner (Leo) Associates, Redwood City, Calif.
Thermal Conductivity of the Human Body During Immersion at Thermal Neutrality and in a Cold Environment.
C. Boutelier, J. Timbal, and J. Colin. Mar 75, 25p NASA-TT-F-16258
Tran-Transl. Into English from Arch. Sci. Physiol. (Paris), V. 27, 1973 p 189-205.

Descriptors: *Cold acclimatization, *Human body, *Thermoregulation, *Water temperature, Adipose tissues, Cold water, Heat transfer, Physiological responses, Submerging, Vasoconstriction.

For abstract, see STAR 1313

N75-21933/7GA PC$3.25/MF$2.25
Scientific Translation Service, Santa Barbara, Calif.
Changes in Rectal and Cutaneous Temperature During Muscular Exercise Performed in Air Temperature Between 10 Degrees and 30 Degrees C.
V. Candas, J. J. Vogt, and J. P. Libert. Apr 75, 11p NASA-TT-F-16259
Contract NASW-2483
Tran-Transl. Into English from Arch. Sci. Physiol. (France), V. 27, 1973 p A239-A246.

Descriptors: *Ambient temperature, *Exercise (Physiology), *Temperature measurement, Body temperature, Muscles, Water vapor.

For abstract, see STAR 1313

N75-21934/5GA PC$3.25/MF$2.25
Scientific Translation Service, Santa Barbara, Calif.
Cutaneous Circulation and Thermal Exchange at Altitude (3800 M).
J. Raynaud, P. Varene, H. Vieillefond, and J. Durand. Apr 75, 11p NASA-TT-F-16311
Contract NASW-2483
Tran-Transl. Into English from Arch. Sci. Physiol. (Paris), V. 27, 1973 p A247-A254.

Descriptors: *Altitude acclimatization, *Human body, *Peripheral circulation, *Thermoregulation, Blood flow, Heart rate, Hypocapnia, Hypoxia, Physical work, Stress (Physiology).

For abstract, see STAR 1313

PB-242 489/3GA PC$3.75/MF$2.25
Michigan Univ., Ann Arbor. Highway Safety Research Inst.
Thoracic Model Improvements (Experimental Tissue Properties). Volume I. Executive Summary.
Final rept. 1 Jul 73-31 Jul 74,
J. W. Melvin, and A. S. Wineman. May 75, 37p
UM-HSRI-BI-74-2-1 DOT-HS-801 557
Contract DOT-HS-031-3-763
See also Volume 2, PB-242 490.

Descriptors: *Thorax, *Tissues(Biology), *Models, Elastic properties, Injuries, Impact, Motor vehicle accidents, Mechanical properties, Stresses, Strains, Monkeys, Humans.
Identifiers: Rhesus monkeys, DOT/5A, DOT/5H.

The general objective of this research program was to obtain mechanical properties, both stress, strain, and rupture strength, for various human tissues that are directly applicable to the thoracic injury problem as defined in the finite element model of the human thorax that is being developed. The properties were determined at strain rates that can occur during fatal automobile accidents. The properties of Rhesus monkey tissues are also of interest in the modelling effort, and consideration was given to providing experimental data on selected Rhesus tissues as well as human tissues.

PB-242 490/1GA PC$6.25/MF$2.25
Michigan Univ., Ann Arbor. Highway Safety Research Inst.
Thoracic Model Improvements (Experimental Tissue Properties). Volume II. Technical Report.
Final rept. 1 Jul 73-31 Jul 74,
J. W. Melvin, and A. S. Wineman. May 75, 174p
UM-HSRI-BI-74-2-2 DOT-HS-801 558
Contract DOT-HS-031-3-763
See also Volume 1, PB-242 489 and Volume 3, PB-242 491.

Descriptors: *Thorax, *Tissues(Biology), *Models, Elastic properties, Injuries, Impact, Motor vehicle accidents, Mechanical properties, Stresses, Strains, Monkeys, Humans.
Identifiers: *Biomechanics, DOT/5A, DOT/5H.

Much of the experimental work on determining the mechanical behavior of soft tissues has not been cast in the framework of a complete solid mechanics tissue behavior from the existing literature. The basic tests reported include uniaxial tension, biaxial membrane inflation and burst, tubular inflation, torsion and direct compression on a very wide range of human and animal tissues. The data provides no information of real use to a continuum mechanics characterization of the tissue behaviors. The main emphasis is upon impact type high strain rate behavior of biological tissues and as such the main form of data acquisition was in terms of high strain rate stress-strain curves to failure.

PB-242 491/9GA PC$8.75/MF$2.25
Michigan Univ., Ann Arbor. Highway Safety Research Inst.
Thoracic Model Improvements (Experimental Tissue Properties). Volume III. Literature Survey.
Final rept. 1 Jul 73-31 Jul 74,
J. W. Melvin, and A. S. Wineman. May 75, 287p
UM-HSRI-BI-74-2-3 DOT-HS-801 559
Contract DOT-HS-031-3-763
See also Volume 2, PB-242 490.

Descriptors: *Thorax, *Tissues(Biology), *Models, Elastic properties, Injuries, Impact, Motor vehicle accidents, Mechanical properties, Stresses, Strains, Monkeys, Humans.
Identifiers: *Biomechanics, DOT/5A, DOT/5H.

This volume contains the results of an extensive literature survey carried out as part of a research project. The survey concentrated on the areas of soft tissue testing and analytical representation of soft tissue mechanical behavior. It was implemented early in the program as an aid in guiding the experimental design and data analysis techniques. In addition, the literature survey was used to study mechanical properties data on thoracic tissues of primary interest to the project.

6T. Toxicology

AD-A010 660/9GA PC$4.75/MF$2.25
Army Medical Bioengineering Research and Development Lab Fort Detrick Md
Toxicity to Aquatic Organisms and Chemistry of Nine Selected Waterborne Pollutants from Munitions Manufacture - A Literature Evaluation.
Final comprehensive rept. Jun-Aug 74,
Dickinson Burrows, and Jack C. Dacre. May 75, 96p Rept no. TR-7503
See also report dated Mar 74, AD-778 725.

Descriptors: *Toxicity, *Munitions industry, Ammunition, Water pollution, Aquatic animals, Picric acid, PETN, Phosphorus, Styphnates, Strontium compounds, Tetryl, Naphthalenes, Chemicals.
Identifiers: *Water pollution effects(Animals), Dinitrotoluene, Resorcinol/trinitro, Nitroguanidine, *Industrial wastes, Potassium perchlorate.

The literature regarding the toxicity to aquatic organisms and the related chemistry of nine military-relevant compounds was evaluated and reviewed. The selected compounds, munitions manufacturing products of potential concern as water-borne pollutants, are dinitrotoluene, tetryl and picric acid, trinitroresorcinol and lead styphnate, pentaerythritol tetranitrate, nitroguanidine, tetracene, potassium perchlorate, red phosphorus and strontium salts. Based on the available toxicity data, recommendations were made for further investigations to be conducted on the first seven of the listed compounds. No further toxicity studies have been proposed for red phosphorus and the strontium compounds.

AD-A010 698/9GA PC$3.25/MF$2.25
Jersey City Medical Center N J Dept of Anesthesiology
Oxygen Toxicity in Adult Rats. I. Variable Individual and Colony Susceptibilities.
Final rept. 15 Dec 72-14 Dec 74,
Roland D. Paegle, and William N. Bernhard. 3 Dec 73, 8p
Contracts N00014-73-C-0227, N00014-72-C-0141
See also Part 2, AD-A010 699.
Availability: Pub. in Respiratory Care, v20 n1 p51-56 Jan 75.

Descriptors: *Toxicity, *Oxygen consumption, *Adaptation(Physiology), Adults, Rats, Survival(General), Therapy, Concentration(Chemistry), Weight reduction, Death, Pulmonary function, Emphysema, Reprints.

Variations in susceptibility to acute oxygen toxicity were observed among animals from the same colony as well as between two different colonies of Sprague-Dawley rats. Animals from Colony I survived, on the average, 6.7 days in 100 per cent oxygen, while the Colony II rats were considerably more susceptible to 100 per cent oxygen and survived, on the average, only 2.5 days. The survival of individual Colony I rats ranged from three to 20 days, Colony II rats from two to three days. Experimental animals were used to anticipate and/or delineate more clearly factors that may either facilitate or complicate long-term oxygen therapy. Gradual adaptation, i.e., increasing the oxygen concentration in steps (40% and 70%) prolonged survival of adult Sprague-Dawley rats when they were finally exposed to 95 or 100 per cent oxygen. THe adaptation had to start at 40 or 70 per cent. Nearly all rats lost weight during their exposure to high oxygen until they died. The partial adaptation or prolonged survival was accompanied by a third (chronic) phase of pulmonary oxygen toxicity, which was characterized by pulmonary scarring, honeycombing, and emphasematous blebs. (Author)

AD-A010 699/7GA PC$3.25/MF$2.25
Jersey City Medical Center N J Dept of Anesthesiology
Oxygen Toxicity in Adult Rats. II. Adaptation and the Chronic Phase.
Final rept. 15 Dec 72-14 Dec 74,
Roland D. Paegle, and William N. Bernhard. 3 Dec 73, 9p
Contracts N00014-73-C-0227, N00014-72-C-0141
See also Part 1, AD-A010 698.
Availability: Pub. in Respiratory Care, v20 n1 p57-63 Jan 75.

Descriptors: *Oxygen consumption, *Toxicity, *Adaptation(Physiology), Pulmonary function, Rats, Adults, Survival(General), Concentration(Chemistry), Exposure(Physiology), Weight reduction, Death, Emphysema, Reprints.

ORNL-5008 PC$5.45/MF$2.25
Oak Ridge National Lab., Tenn.
Ornl Tobacco Smoke Research Program Summary Report.
M. R. Guerin, and P. Nettesheim. Mar 75, 95p
Contract W-7405-eng-26

Descriptors: (*Tobacco products, *Research programs), (*Tobacco smokes, Research programs), Biological effects, Man, Toxicity.

For abstract, see NSA 31 12, number 35670.

PB-241 635/2GA PC$3.75/MF$2.25
Oceanic Inst., Waimanalo, Hawaii.
Effects of Mirex and Methoxychlor on Striped Mullet, 'Mugil cephalus L'.
Final rept.,
Jong H. Lee, Colin E. Nash, and Joseph R. Sylvester. 30 Apr 74, 26p OI-120 EPA/660/3-75-015
Contract EPA-R802348

Descriptors: *Fishes, *Insecticides, *Toxicity, Mortality, Eggs, Larvae, Accumulation, Tissues(Biology), Chlorine aliphatic compounds, Pesticides.
Identifiers: Mugil cephalus, *Mullets, Pesticide residues, Bioaccumulation, *Water pollution effects(Animals), *Methoxychlor, *Mirex, Methenocyclobuta(cd)pentalenes.

The effects of two chlorinated insecticides, mirex and methoxychlor, on striped mullet, Mugil cephalus L., were studied. Test concentrations of both insecticides used were 0.01, 0.1, 1.0 and 10.0 ppm in dynamic bioassay. Young juveniles were more susceptible to mirex exposure than older juveniles or adults. For young juveniles, mortalities were highest in concentrations of 0.1 and 1.0 ppm and were less in concentrations of 0.01 and 10.0 ppm. Significant amounts of mirex residues were accumulated in the body tissues of the test fish; concentrations increased with increased environmental concentrations. Methoxychlor was more toxic to mullet than mirex. Mortalities were greater than 90 percent over a 96-hour period for all life stages studied at concentration of 0.1, 1.0 and 10.0 ppm. Relative to mirex, small amounts of methoxychlor residues accumulated in the tissues of the test fish. Results of the experiments on eggs and larvae were inconclusive.

PB-242 098/2GA PC$4.75/MF$2.25
Medical Coll. of Wisconsin, Milwaukee. Dept. of Environmental Medicine.
Exposure of Humans to Carbon Monoxide Combined with Ingestion of Diphenhydramine Hydrochloride or Phenacetin.
Final rept.
14 Aug 74, 81p* MCOW-ENVM-CO-74-1 CRC-APRAC-CAPM-3-68-5

Descriptors: *Carbon monoxide, *Drugs, *Phenacetin, *Toxicity, Exposure, Air pollution,

Health, Pharmacology, Analgesics, Antihistamines, Performance(Human).
Identifiers: Synergism, Carbonylhemoglobin, *Air pollution effects(Humans), *Diphenhydramine.

The synergistic effect of CO and two commonly prescribed drugs, phenacetin and diphenhydramine hydrochloride were evaluated. The COHb saturation tested was 14 percent (above average for cigarette smokers), while drug doses were those usually prescribed. No synergistic effects were observed in the study. Three additional observations were made: (1) the occurrence of CO induced headaches at COHb saturations of 14 percent; (2) the possible effect of CO exposure on EEG activity at this level; and (3) the finding that phenacetin, as an analgesic, did not lessen the headaches induced by the CO exposure.

PB-242 099/0GA PC$3.75/MF$2.25
Medical Coll. of Wisconsin, Milwaukee. Dept. of Environmental Medicine.
Exposure of Humans to Carbon Monoxide Combined with Ingestion of Ethyl Alcohol and the Comparison of Human Performance When Exposed for Varying Periods of Time to Carbon Monoxide.
Final rept.
14 Aug 74, 41p* MCOW-ENVM-CO-74-2 CRC-APRAC-CAPM-3-68-6

Descriptors: *Carbon monoxide, *Ethyl alcohol, *Toxicity, Dosage, Exposure, Air pollution, Performance(Human), Behavior.
Identifiers: *Air pollution effects(Humans), Carbonylhemoglobin, *Alcohol ingestion, Synergism.

The effects of CO and ethyl alcohol on behavioral test performance were assessed at 24 hour exposure as compared to a 5-1/2 hour exposure to identical concentrations of CO. A dose level of 1.6ml of 100 proof alcohol/kg body weight and a COHb blood level of approximately 14 percent were chosen. The purpose of the study was to test the hypothesis that a 24-hour exposure to low levels of CO would have deleterious effects on behavior and that alcohol would potentiate such effects. The data obtained from tests of coordination, arithmetic, inspection, manual dexterity, time estimation, and vigilance did not provide evidence to substantiate either of these hypotheses. The only positive result was alcohol adversely affects eye-hand coordination.

PB-242 105/5GA PC$4.25/MF$2.25
National Water Quality Lab., Duluth, Minn.
Methods for Acute Toxicity Tests with Fish, Macroinvertebrates, and Amphibians.
Final rept.
Apr 75, 68p* EPA/660/3-75-009

Descriptors: *Toxicity, *Aquatic animals, Fishes, Amphibia, Invertebrates, Tests, Bioassay, Test chambers, Water pollution, Ecology, Recommendations.
Identifiers: *Water pollution effects(Animals).

Four detailed methods for conducting acute toxicity tests with freshwater, estuarine, and marine fish, macroinvertebrates, and amphibians are presented in an integrated format. Nomenclature is consistent with that used in other branches of toxicology. Concepts incorporated into the methods are applicable to toxicity tests with most aquatic organisms.

PB-242 291/3GA PC$4.25/MF$2.25
Environmental Protection Agency, Washington, D.C. Office of Program Integration.
Scientific and Technical Assessment Report on Manganese.
Final rept.
Apr 75, 66p* EPA/600/6-75-002

Descriptors: *Manganese, *Public health, *Toxicology, *Ecology, Air pollution, Fumes, Dust, Concentration(Composition), Control, Sources, Central nervous system, Pneumonia, Toxic diseases, Measurement, Industrial medicine.
Identifiers: *Air pollution effects(Humans), Air pollution control.

The report is a review and evaluation of the current knowledge of manganese in the environment as related to possible deleterious effects on human health and welfare. Sources, distribution, measurement, and control technology are also considered. Manganese is associated with small particles in the air. Concentrations measured in ambient air averaged 0.1 microgram/cu m (annual) with a maximum of 8.3 microgram/cu m (annual) near a large source. In Norway, a form of pneumonia was attributed to airborne manganese in a community where concentrations were measured at 46 microgram/cu m. Manganese poisoning characterized by progressive central nervous system deterioration has occurred under occupational exposure but apparently not from atmospheric exposure.

PB-242 313/5GA PC$3.75/MF$2.25
Oregon State Univ., Corvallis. Water Resources Research Inst.
Hydrogen Sulfide Effects on Selected Larval and Adult Marine Invertebrates.
Completion rept.,
Richard S. Caldwell. Apr 75, 29p WRRI-31 W75-08491, OWRT-A-020-ORE(1)

Descriptors: *Hydrogen sulfide, *Aquatic animals, *Invertebrates, *Toxicity, Larvae, Marine biology, Crabs, Oysters, Estuaries, Anoxia, Tolerances(Physiology), Lethal dosage, Marine biology, Water pollution, Oxygen.
Identifiers: *Water pollution effects(Animals).

Six species of marine invertebrates including larval and juvenile Dungeness crab, Cancer magister, and Pacific oyster, Crassostrea gigas, were examined for their tolerance to dissolved hydrogen sulfide in sea-water. In tests lasting up to four days, the sulfide tolerances of organisms ranged from a low of 0.2 mg/l for Anisogammarus confervicola to 6.0 mg/l for Macoma balthica. The range of tolerances appeared to correlate with the expected degree of anoxic conditions that would be encountered by each species in its natural habitat. Early embroys of C. gigas were very sensitive to hydrogen sulfide since an exposure to 0.32 mg/l for only 2 h. drastically affected the normal development of this stage. Dungeness crab zoeae exposed for 74 h. to 0.56 mg/l sulfide were less able to tolerate a 15 or 90 min. period of heat shock at 29.0C than were control organisms or those exposed to 0.18 mg/l. It is suggested that estuarine organisms live very close to their tolerance limits for hydrogen sulfide.

PB-242 340/8GA PC$4.25/MF$2.25
Auburn Univ., Ala. Water Resources Research Inst.
The Photosensitizing Action of 2-Naphthylamine on 'Escherichia coli', K-12.
Master's thesis,
Al Frederick Osteen. Nov 73, 57p W75-08476, OWRT-A-035-ALA(2)

Descriptors: *Escherichia coli, *Carcinogens, *Photosensitivity, Naphthalene compounds, Theses, Water pollution, Malignant neoplasms, Amines, Coliform bacteria, Toxicity, Oxygen, Dissolved gases, Industrial wastes, Byproducts, Photochemical reactions, Decomposition reactions.
Identifiers: *Water pollution effects(Animals), *Naphthylamines, *Phototoxicity, Pollutant identification, Cancer.

The report discusses 2-naphthylamine, an industrial carcinogen which has been under study since 1930. Biological investigators have tested for tumor incidence caused by injections, oral doses, or vapor inhalation, of the amine and its metabolites. In this study the photo-toxicity of the amine is investigated by conducting binding studies and measuring the energy transferred from the amine to Escherichia coli, a coliform bacteria. Detection of a photoproduct of the amine formed within timed periods of the kill zone has been accomplished and preliminary study of its spectra has been made.

7. CHEMISTRY

7A. Chemical Engineering

CEA-CONF-2904 PC$4.75/MF$2.25
CEA Centre d'Etudes Nucleaires de Fontenay-aux-Roses, 92 (France). Dept. de Genie Radioactif.
Example of Nitric Acid Recovery by Solvent Extraction.
J. M. Demarthe, M. Tarnero, P. Miquel, and J. P. Goumondy. 31p CONF-740917-6
U.S. Sales Only.

Descriptors: (*Nitric acid, *Recovery), (*Nickel sulfates, *Separation processes), Bench-scale experiments, Cost, Dodecane, Solvent extraction.

For abstract, see NSA 31 12, number 35674.

N75-21636/6GA PC$4.25/MF$2.25
Clemson Univ., S.C. Dept. of Mechanical Engineering.
Parametric Test of a Zirconium (4) Oxide-Polyacrylic Acid Dual Layer Hyperfiltration Membrane with Spacecraft Washwater.
Final Report, Aug. 1973 - Aug. 1974.
C. A. Brandon, J. L. Gaddis, and A. M. El-nashar. Jan 75, 62p NASA-CR-141755, T-932-5-1
Contract NAS9-13669

Descriptors: *Acrylic acid, *Membranes, *Water treatment, *Zirconium oxides, Ammonia, Filtration, Osmosis, Ureas, Water balance, Water reclamation.

For abstract, see STAR 1313

PATENT-3 859 808
Not available NTIS
Atomic Energy Commission, Washington, D.C.
Cold Trap for Purging Air from a Gas Diffusion System.
Patent,
Manson Benedict. Filed 5 Apr 46, patented 14 Jan 75, 5p PAT-APPL-659 716
Government-owned invention available for licensing. Copy of patent available Commissioner of Patents, Washington, D.C. 20231 $0.50.

Descriptors: *Cold traps, *Patents, *Separators, Gases, Separation, Freezing.
Identifiers: PAT-CL-62-55-5, *Gaseous diffusion plants.

The patent concerns the diffusion separation of components of a gaseous mixture containing constituents of different molecular weight. The apparatus described involves a cold trap for condensing the gases as part of a multistage diffusion plant. It is especially applicable to the condensation of uranium hexafluorides for the removal of contaminating air from a diffusion separation system.

PB-241 706/1GA PC$5.25/MF$2.25
Hawaii State Dept. of Land and Natural Resources, Honolulu. Div. of Water and Land Development.
Water Desalting in Hawaii.
Research and development progress rept.,
J. M. Duncan, and B. J. Garrick. Jun 74, 106p
R50 W75-07506, Int-OSW-RDPR-75-1001
Contract DI-14-30-3093
Prepared by Holmes and Narver, Inc., Anaheim, Calif. Nuclear and Systems Group.

Descriptors: *Desalting, *Hawaii, Capitalized costs, Operating costs, Water supply, Ion exchanging, Brackish water, Cost estimates.
Identifiers: *Electrodialysis desalination, *Reverse osmosis desalination, *Ion exchange desalination.

Possible applications were studied for water desalting in Hawaii. General water supply features of the islands are discussed. This study was limited to the brackish waters and the electrodialysis, reverse osmosis, and ion exchange processes. Cost estimates and comparisons to fresh water costs are discussed in detail.

PB-241 791/3GA PC$4.25/MF$2.25
New Jersey Zinc Co., Palmerton, Pa. Research Dept.
The Reclamation of Sulfuric Acid from Waste Streams.
Environmental protection technology series (Final),
Howard C. Peterson, and Peter L. Kern. Apr 75, 53p EPA/670/2-75-016
Grant EPA-S-801349

Descriptors: *Sulfuric acid, *Materials recovery, *Industrial waste treatment, Spray drying, Cost estimates, Titanium dioxide, Sulfates, Chemical industry, Evaporation.
Identifiers: *Water pollution control.

The New Jersey Zinc Company process for acid recovery employs spray evaporation to separate sulfuric acid from metallic sulfates. The salts are removed as dry, free-flowing solids and the acid-laden off-gas is directly cooled to partially condense product acid having a concentration in excess of 85% H2SO4. The process was piloted at Palmerton, Pennsylvania, at a rate of two tons per day of sulfuric acid (100 percent basis) using as feed the waste stream of a titanium dioxide pigment plant. On the basis of the pilot work, a commercial plant was designed to process 345,000 metric tons annually of 19.5 percent H2SO4 waste end liquor from a 38,100-metric-ton-per-year pigment plant. The estimated investment (as of January 1, 1975) is $7,800,000. Operating costs (including depreciation at 10 percent) would be approximately $77 per metric ton of 100 percent H2SO4 recovered. This cost includes neutralization of the dried solids and disposal in a landfill site.

PB-241 792/1GA PC$4.75/MF$2.25
Exxon Research and Engineering Co., Linden, N.J.
Evaluation of Pollution Control in Fossil Fuel Conversion Processes. Liquefaction: Section 2. SRC Process.
Final rept.,
C. E. Jahnig. Mar 75, 88p GRU.8DJ.75
EPA/650/2-74-009-f
Contract EPA-02-0629
See also PB-241 141.

Descriptors: *Solvent refined coal, *Air pollution control, *Coal liquefaction, *Water pollution control, *Solid waste disposal, Coal handling, Coal storage, Thermal efficiency, Waste water, Water treatment, Coal preparation.
Identifiers: *SRC process, *Fuel conversion.

The report gives results of a review of the Solvent Refined Coal (SRC) process from the standpoint of its potential for affecting the environment. It includes estimates of the quantities of solid, liquid, and gaseous effluents, where possible, as well as the thermal efficiency of the process. It proposes a number of possible process modifications or alternatives which could facilitate pollution control or increase thermal efficiency, and points out new technology needs.

PB-241 793/9GA PC$3.75/MF$2.25
Lancy Labs., Inc., Zelienople, Pa.
Pilot Plant Optimization of Phosphoric Acid Recovery Process.
Final rept.,
Leslie E. Lancy, Fred A. Steward, and James H. Weet. Apr 75, 37p EPA/670/2-75-015
Grant EPA-S-802637
Prepared in cooperation with Douglas and Lomason Co., Detroit, Mich.

Descriptors: *Phosphoric acids, *Industrial waste treatment, *Ion exchanging, *Materials recovery, *Metal finishing, Aluminum industry, Pilot plants, Bright plating, Cost estimates.
Identifiers: *Water pollution control.

A pilot plant study was carried out which demonstrated the effectiveness and economic feasibility of a unique ion exchange process referred to as 'acid retardation' for purifying spent phosphoric acid used in bright finishing aluminum parts. A continuous ion exchange system was employed to separated the aluminum contamination from a spent phosphoric acid waste obtained from a manufacturing plant. The anion resin accomplishes the separation by retarding the phosphoric acid as the processing solution flows through the bed. The aluminum remains in the waste solution and passes out of the column in the effluent. The acid is then eluted from the bed with water, eliminating the use of chemicals which are needed to regenerate the resin in conventional ion exchange systems.

PB-241 803/6GA PC$6.25/MF$2.25
Battelle Columbus Labs., Ohio.
Potentially Hazardous Emissions from the Extraction and Processing of Coal and Oil.
Final rept.,
H. E. Lebowitz, S. S. Tam, G. R. Smithson, Jr., H. Nack, and J. H. Oxley. Apr 75, 162p EPA/650/2-75-038
Contract EPA-68-02-1323

Descriptors: *Air pollution, *Water pollution, *Petroleum refining, *Coal preparation, *Environmental impacts, Coking, Coal gasification, Coal liquefaction, Effluents, Chemical analysis, Hazardous materials.
Identifiers: Lurgi process, Solvent refined coal, Fuel conversion, Coke plants, Coal gasification plants.

The report lists potentially hazardous materials which may be associated with the air, water, and solid waste from a refinery, a coke plant, a Lurgi high-Btu gas process, and the solvent refined coal process. Fugitive loss was identified as the major emissions source in the refinery, although its composition is difficult to quantify. Coking is the most offensive of the four processes assessed. Coal gasification may produce materials as dangerous as those from the coke plant, but the former will probably be more contained than coke oven emissions. The environmental impact of coal liquefaction is not well defined; however, liquefaction products will probably be more hazardous than crude oil products, and their refining and utilization will be worse offenders than corresponding petroleum operations.

PB-242 118/8GA PC$4.75/MF$2.25
Air Products and Chemicals, Inc., Marcus Hook, Pa. Houdry Div.
Engineering and Cost Study of Air Pollution Control for the Petrochemical Industry. Volume 4: Formaldehyde Manufacture with the Silver Catalyst Process.
Final rept.,
R. B. Morris, F. B. Higgings, Jr., J. A. Lee, R. Newirth, and J. W. Pervier. Mar 75, 94p*
EPA/450/3-73-006-d
Contract EPA-68-02-0255
See also Volume 3, PB-240 492.

Descriptors: *Formaldehyde, *Air pollution, Capitalized costs, Process charting, Manufacturing, Synthesis(Chemistry), Cost estimates, Economic analysis, Catalysts, Silver, Cost effectiveness, Operating costs, Hydrocarbons, Carbon monoxide, Flue gases, Chemical composition, Air pollution control equipment, Incinerators, Scrubbers.
Identifiers: *Petrochemical industry, *Air pollution control, Emissions inventories.

This document is one of a series prepared for the Environmental Protection Agency (EPA) to assist it in determining those petrochemical processes for which standards should be promulgated. This volume covers the manufacture of formaldehyde with the silver catalyst process. Included is a process and industry description, an engineering description of available emission control systems, the cost of these systems, and the financial impact of emission control on the industry. Also presented are suggested air episode procedures and plant inspection procedures.

7B. Inorganic Chemistry

AD-A010 554/4GA PC$3.25/MF$2.25
Pennwalt Corp King of Prussia Pa Research and Development Dept
Inorganic Coordination Polymers. XVIII. Observations on Brittle and Flexible Films of (Cr((OP(CH3)(C6H5)O)2)(OP((C8H17)2)O))x.
Technical rept.,
Piero Nannelli, H. D. Gillman, and B. P. Block. May 75, 21p Rept no. TR-14
Contract N00014-69-C-0122
See also report dated Aug 74, AD-783 946.

Descriptors: *Inorganic polymers, *Chromium compounds, *Metal complexes, *Phosphinates, Pyrolysis, Flexural properties, Films, Brittleness, Viscosity, Antioxidants, Synthesis(Chemistry), Infrared spectra, Thermogravimetric analysis, Molecular structure, Thermal stability.

Films of Cr(OP(CH3)(C6H5)O)2(OP(C8H17)2O))x, formed during the reaction of (Cr(OH)(OP(CH3)(C6H5)O)2)x with dioctylphosphinic acid, are either brittle or flexible depending on the details of the preparation of the chromium(III) bis(phosphinate) precursor. Both kinds of film appear to contain mainly triple-bridged chains. Differing degrees of randomness in distribution of the two kinds of phosphinate bridges and, hence, of the internally plasticizing octyl groups along the chain account for the observed differences in flexibility. X-ray diffraction patterns, and birefringence. The observed intrinsic viscosities of 9-18 dl/g indicate that these tris(phosphinates) form microgels rather than true solutions. The thermal degradation of these films proceeds by the oxidation and cleavage of the organic side groups. Addition of antioxidants to the flexible films significantly increases the longevity of their flexibility at 200C.

AD-A010 603/9GA PC$3.25/MF$2.25
Chicago Univ Ill James Franck Inst
Practical Approximation to Reaction Probabilities from Selected Initial Quantum States.
J. C. Light, and A. Altenberger-Siczek. 28 Aug 74, 6p ARO-9751.14-C
Grant DA-ARO-D-31-124-71-G170
Availability: Pub. in Chemical Physics Letters, v30 n2 p195-199 15 Jan 75.

Descriptors: *Chemical reactions, *Approximation(Mathematics), Scattering, Cross sections, Boundaries, Probability, Theory, Reprints.
Identifiers: Molecular scattering, Transition state.

A method for the economical evaluation of reasonable approximations to the probability of reaction from specified internal states of reactants is proposed for elementary exchange reactions. It requires the solution of the close coupling equations in the reactant channel only and the imposition of boundary conditions on a hypersurface at the transition state. A numerical comparison with the complete quantum calculation for the planar H+H2 reaction is presented and the agreement is shown to be good. (Author)

AD-A010 773/0GA PC$3.75/MF$2.25
California Univ Los Angeles Dept of Chemistry
Preparation of B-sigma-Carboranyl Iridium Complexes by Oxidative Addition of Terminal Boron-Hydrogen Bonds to Iridium(I) Species.
Interim rept.,
Elvin L. Hoel, and M. F. Hawthorne. 2 Jun 75, 42p Rept no. TR-89
Contract N00014-75-C-0301

Descriptors: *Iridium compounds, *Metal complexes, *Carboranes, Nuclear magnetic resonance, Infrared spectra, Synthesis(Chemistry), Molecular structure, Addition reactions, Phosphine, Oxidation, Chemical bonds.
Identifiers: *Iridium/bis(triphenylphosphine)-cholor-dicarbadodecaboranyl-chloro, Nuclear magnetic resonance(Boron 11), Dicarbadodecaborane(12).

A number of B-sigma-carboranyl iridium complexes have been prepared by both intra- and intermolecular oxidative addition of terminal boron-hydrogen bonds to iridium(I) species. The products from reactions between 1,2-, 1,7-, or 1,12-C2B10H12 and L2IrCl (L = PPh3 or AsPh3) are trigonal bipyramidal complexes of iridium(III) with axial hydride and chloride ligands, two equatorial L ligands and an equatorial carboranyl ligand sigma-bonded to the metal through one of the boron atoms closest to the carbon atoms. The preparation, characterization and structures of these complexes are discussed, as well as their significance as model intermediates for transition metal catalyzed deuterium exchange at terminal boron-hydrogen bonds.

BARC-747 PC$4.00/MF$2.25
Bhabha Atomic Research Centre, Bombay (India). Spectroscopy Div.
X-Ray Fluorescence Method for the Determination of as and Zn in Tin Oxide.
R. M. Dixit, and S. K. Kapoor. 1974, 14p
U.S. Sales Only.

Descriptors: (*Tin oxides, *X-ray fluorescence analysis), (*Arsenic, X-ray fluorescence analysis), (*Zinc, X-ray fluorescence analysis), Accuracy, Impurities, Lead.

For abstract, see NSA 31 12, number 35672.

COM-75-50342/5GA Not available NTIS
National Bureau of Standards, Washington, D.C.
Fluorescence Detection of Nitric Oxide in Nitrogen.
Final rept.,
Frederick P. Schwarz, and Hideo Okabe. Apr 75, 5p
Pub. in Analytical Chemistry, v47 n4 p703-707 Apr 75.

Descriptors: *Nitrogen oxide(NO), *Fluorescence, *Spectroscopic analysis, Nitrogen, Exhaust gases.
Identifiers: Reprints.

An accurate, rapid, and simple technique is described for the measurement of nitric oxide in standard reference mixture s of NO in N2. The technique investigated is based on the measurement of the fluorescence intensity emitted by NO when it absorbs 213.8-nm radiation from a Zn discharge lamp. The fluorescence is in the 220- to 300-nm region and its intensity is proportional to the 213.8-nm light intensity and the NO concentration. The quenching half pressures of NO, H2O, CO2, O2, C2H4, C3H8, and H2 are, given. The application of this method to detect NO and SO2 in automotive exhaust is discussed.

PB-241 516/4GA PC$5.25/MF$2.25
Illinois Univ., Urbana. Water Resources Center.
Reagents for Determinations of Trace Impurities in Water, Phase II.
Final rept. 1 Jul 71-30 Sep 74,
Albert L. Caskey, Richard J. Antepenko, and Jean C. Lewis Swan. Apr 75, 118p UILU-WRC-75-0100 W75-07352, OWRT-A-049-ILL(1)
Contract DI-14-31-0001-3513

Descriptors: *Water analysis, *Nitrites, *Nitrates, *Colorimetric analysis, Spectrophotometry, Sulfonates, Zinc organic compounds, Naphthalene compounds, Performance evaluation.
Identifiers: Naphthalene sulfonic acid/hydroxy-(zinc-salt), Water pollution detection.

Sensitive, specific, stable, water-soluble reagents are needed for rapid, spectrophotometric determinations of trace impurities in water. A new method for the determination of nitrate in water is described which uses zinc 1-naphthol-4-sulfonate, an easily prepared, readily purified, stable, water-soluble reagent; the reagent is much better than 1-napthol-4-sulfonic acid, which is satisfactory only under carefully controlled conditions. The same reagent, zinc 1-naphthol-4-sulfonate, also has been proposed for the rapid, specific, sensitive determination of nitrite in natural waters. Nitrite can be determined at ppm levels in the presence of several thousand fold excess of nitrate. The methods can be applied to such diverse systems as lakes where agricultural fertilizer run-off may be significant, to effluents from plants in the food-preparation industry, and to natural-water systems in highly mineralized areas.

UCRL-51752 PC$4.00/MF$2.25
California Univ., Livermore Lawrence Livermore Lab.
Reactions of Lanthanon Sequioxides with Divalent Europium Oxide by Vapor--Phase Transport.
E. Catalano, W. O. J. Boo, D. D. McCoy, and R. Gutmacher. 26 Feb 75, 27p
Contract W-7405-Eng-48

Descriptors: (*Europium oxides, *Chemical reactions), (*Gadolinium oxides, Chemical reactions), (*Dysprosium oxides, Chemical reactions), Electron microprobe analysis, Lattice parameters, Very high temperature, X-ray diffraction, Holmium oxides, Ytterbium oxides, Lutetium oxides.

For abstract, see NSA 31 12, number 35676.

WANL-TMI-1404 PC$4.50/MF$2.25
Westinghouse Electric Corp., Pittsburgh, Pa. Astronuclear Lab.
Examination of the Kinetics of the Graphite--Hydrogen Reaction.
J. M. Bridges. 10 Feb 65, 26p

Descriptors: (*Graphite, *Hydridation), (*Hydrogen, *Corrosive effects), Corrosion, Reaction kinetics, Very high temperature.

For abstract, see NSA 31 12, number 34046.

7C. Organic Chemistry

AD-A010 581/7GA PC$3.25/MF$2.25
California Univ Los Angeles Dept of Chemistry
Synthesis of Diazonium Derivatives of B10H10(2-) from Arylazo Intermediates.
Interim rept.,
Richard N. Leyden, and M. Frederick Hawthorne. 15 May 75, 15p Rept nos. TR-88, Contrib-3214
Contract N00014-75-C-0301

Descriptors: *Borates, *Diazo compounds, Chemical reactions, Decomposition, Pyrolysis, Nuclear magnetic resonance, Infrared spectra, Synthesis(Chemistry).
Identifiers: Chemical reaction mechanisms, Borate(-2)/decahydro-deca, Nuclear magnetic resonance(Boron 11).

Thermal decomposition of protonated arylazo derivatives of B10H10(2-) produce diazonium derivatives of B10H10(2-) plus the arene. A mechanism is suggested which involves electrophilic attack by a proton on the phenyl carbon atom bonded to the azo nitrogen atom. The general utility of this reaction is illustrated by the preparation of a variety of polyhedral B10(-) derivatives.

AD-A010 617/9GA PC$3.75/MF$2.25
Frank J Seiler Research Lab United States Air Force Academy Colo
The Synthesis of Tetraamino Aryl Ethers.
Final technical rept. Jul 71-Jun 74,
Warren Villaescusa, and John G. Breland, Jr. Jan 75, 43p Rept no. FJSRL-TR-75-0001

Descriptors: *Amines, *Aromatic compounds, Synthesis(Chemistry), Benzene, Nuclear magnetic resonance, Mass spectra, Heat resistant plastics, Polymers.
Identifiers: Benzene/bis(diaminophenoxy), Biphenyl/bis(diaminophenoxy), Naphthalene/bis(diaminophenoxy), Nuclear magnetic resonance(Fluorine 19), Sulfone/bis((diaminophenoxy)phenyl), Sulfide/bis((dominophenoxy)phenyl).

A general synthesis for the bis(3,4-diaminophenoxy)aryl compounds has been developed. Nucleophilic substitution of 1,2-dinitro-4-fluorobenzene by the sodium salts of aromatic diols produce tetranitro aryl ethers. Catalytic reduction of these compounds in the presence of hydrazine give the corresponding tetrafunctional amines in good yields. Polymers using these oxyarylene-amines display both good thermal stability and increased solubility in aprotic solvents such as m-cresol.

AD-A010 676/5GA PC$3.25/MF$2.25
Purdue Univ Lafayette Ind
Trialkylborohydrides as New Versatile Reducing Agents in Organic Synthesis.
S. Krishnamurthy. 1974, 7p ARO-11437.1-C
Grants DA-ARO-D-31-124-73-G148, DA-ARO-D-31-124-73-G1
Availability: Pub. in Aldrichimica Acta, v7 p55-60 1974.

Descriptors: *Borohydrides, *Reduction(Chemistry), *Synthesis(Chemistry), *Organic compounds, Alkyl radicals, Chemical reactions, Reprints.
Identifiers: Reducing agents.

This review summarizes the discovery of the exceptional properties of trialkylborohydrides, the various methods that have been developed for the synthesis of trialkylborohydrides and their utility in organic synthesis. (Author)

AD-A010 704/5GA PC$5.25/MF$2.25
Stanford Research Inst Menlo Park Calif

Methods of Identifying and Determining Source and Age of Petroleum Found in the Marine Environment.
Final rept. 26 Jun 72-28 Jun 74,
Martin E. Scolnick, Arthur C. Scott, and Michael Anbar. Jun 74, 121p USCG-D-61-75
Contract DOT-CG-22996-A

Descriptors: *Chemical analysis, Distillation, Oils, Oil spills, Mass spectroscopy, Spectrum analysis, Statistical analysis, Data processing, Extraction, Weathering, Experimental design, Mass spectra, Identification.
Identifiers: *Field ionization mass spectroscopy, *Oil pollution detection, DOT/5C, DOT/5N.

The feasibility of oil identification by nonfragmenting field ionization multiscanning mass spectrometry has been demonstrated. A system consisting of a multipoint field ionization source, ion optics elements, E x B velocity filter, detector and image intensifying fluorescent screen (for spectrometer tuning) and a 4096-channel analyzer is described in detail. Preparation of oil samples by vacuum distillation and chemical derivatization is also described. A statistical model for the analysis of spectrometer data is derived and applied to selected peaks from spectra consisting of the integration of more than 1000 scans of fuel oil samples in the mass range 190 < M < 380 amu. Included are discussions of spectrometer noise and stability, systematic errors, and the feasibility of computer data handling.

AD-A010 711/0GA PC$3.25/MF$2.25
Drexel Univ Philadelphia Pa Dept of Chemistry
Mechanisms of Thermal Decomposition of Stored Materials.
Quarterly rept. no. 2, 1 Apr-30 Jun 74,
Louis L. Pytlewski. Apr 75, 15p ED-CR-74041
Contract DAAA15-74-C-0113
See also report dated Oct 74, AD-A009 762.

Descriptors: *Pyrolysis, *Exothermic reactions, Polymerization, Decomposition, Chlorine, Chlorination, Dyes, Exothermic reactions, Isocyanates, Kits.
Identifiers: *XXCC3 impregnant, Azo dyes, Chemical reaction mechanisms, *CC2 impregnant.

The M13 Kit Clothing Impregnant contains a dye, p-nitrophenyl-beta-naphtholamine which reacts violently with Cl2 gas at room temp. and thusly functions as a chemical 'fuze' to cause the XXCC-3 mixture to burn exothermically and completely. The principal source of heat is due to the polymerization of the trichlorophenyl isocyanate formed. A kit Cl2 analysis is reported and a Cl2 concentration of 1.3% or greater is needed for kit burn. Thermal decomposition reactions are discussed.

AD-A010 844/9GA PC$4.25/MF$2.25
Massachusetts Univ Amherst Materials Research Lab
Mechanical Synthesis of Block and Graft Copolymers,
Antonio Casale, and Roger S. Porter. 22 Apr 74, 74p ARO-12557.1-C
Grant DAHC04-75-G-0020
Availability: Pub. in Advances in Polymer Science, Fortschritte der Hochpolymeren-Forschung, v17 71p 1975.

Descriptors: *Polymers, *Block polymers, Elastomers, Copolymers, Synthesis(Chemistry), Mechanics, Deformation, Reprints.
Identifiers: Graft polymers, *Mechanical synthesis.

The synthesis of block and graft copolymers by mechanical forces has been earilier reviewed by many authors. This review is thus not intended to be exhaustive and a different approach has thus been taken. The material is organized by state of matter rather than by the instruments used. Thus the authors hope to provide a descriptive mosaic for the parallel studies developing in different countries and in different facets of the field. Some of the original references may be difficult to procure so that more general secondary references are cited in some cases. (Author)

AD-A010 865/4GA PC$3.25/MF$2.25
Georgetown Univ Washington D C Dept of Chemistry
Stable Organic Derivatives of Heteropoly Anions, Pentamolybdobisphosphonates.
Technical rept.,
Wonsuk Kwak, Michael T. Pope, and Thomas F. Scully. May 75, 20p Rept no. TR-1
Contract N00014-69-A-0220-0009
See also AD-A010 866.

Descriptors: *Molybdates, *Phosphates, *Complex compounds, Ultraviolet spectra, Molecular structure, Anions, Infrared spectra, Metalorganic compounds, Salts.
Identifiers: Heteropoly complexes.

Heteropoly molybdates containing covalently bound organic moieties have been prepared and characterized by chemical analysis and spectroscopic measurements. Salts of the anions (RP)2Mo5O21(4-), where R = H, CH3, C2H5, C6H5, C2H4NH3(+) and pCH2C6H4NH3(+), are stable in aqueous solution at pH 2.5 - 5. The new complexes have a structure related to that of P2Mo5O23(6-) and are not reducible to heteropoly blue species. The amino derivatives are the first examples of zwitterionic heteropoly complexes. Applications of organic derivatives of heteropoly complexes, of which the molybdophosphonates are the first examples, are briefly considered.

AD-A010 866/2GA PC$3.25/MF$2.25
Georgetown Univ Washington D C Dept of Chemistry
A New Type of Heteropoly Anion. Tetramolybdo Complexes of Dialkyl- and Diaryl Arsinates.
Technical rept.,
Kathleen M. Barkigia, Ljudmila Rajkovic, Michael T. Pope, and Carl O. Quicksall. May 75, 12p Rept no. TR-2
Contract N00014-69-A-0220-0009
See also AD-A010 865.

Descriptors: *Molybdates, *Complex compounds, Arsenic compounds, Crystal structure, Synthesis(Chemistry), Molecular structure, Anions, Metalorganic compounds.
Identifiers: *Arsinates, Heteropoly complexes.

Synthesis and characterization of several salts of the heteropoly complexes (R2AsMo4O14(OH))(2-), R = CH3, C2H5, C6H5, are described. These are some of the first examples of stable organic derivatives of heteropoly anions. The crystal structure of (CN3H6)2((CH3)2AsMo4O14(OH))-H2O shows the anion to consist of a compact cluster of edge- and face-shared MoO6 octahedra capped by the (CH3)2AsO2 tetrahedron. The new complexes have two other unusual features. First, a uniquely low charge (2-) for a polyanion that is stable in aqueous solution (pH 2-6) and second, a proton characterized by nmr and ir, that appears to be localized on the oxygen atom that bridges the four molybdenums.

AD-A010 909/0GA PC$3.25/MF$2.25
California Univ Irvine Dept of Chemistry
Trace Monitoring of Ketene Produced in Gas Phase Reactions,
George M. Breuer, Fred J. Grieman, and Edward K. C. Lee. 21 Oct 74, 2p Rept no. A-11
Contracts N00014-75-C-0813, N00014-69-A-0200-9005
Availability: Pub. in Jnl. of Physical Chemistry, v79 p542 1975.

Descriptors: *Ketenes, *Trace gases, *Gas analysis, *Quantitative analysis, Air pollution, Monitoring, Gas chromatography, Reprints.

A simple, sensitive analytical method for measuring trace quantity of ketene in a gas sample has been developed in the course of studying photochemistry of 3-oxetanone. Ketene is reacted efficiently with methanol to give methylacetate which is separated by gas chromatography and detected by flame ionization detector. Since ketene is present as an air pollutant, this method can be used for its monitoring. (Author)

AD-A011 001/5GA PC$3.25/MF$2.25
Massachusetts Univ Amherst
An Improved Model for Crystalline Orientation of Spherulitic polymers,
Do Yeung Yoon, Catherina Chang, and Richard S. Stein. 8 Nov 73, 21p ARO-10645.12-C
Contract DAAG46-72-C-0076, Grant DA-ARO-D-31-124-72-G161
Availability: Pub. in Jnl. of Polymer Science, v12 p2091-2110 1974.

Descriptors: *Spherulites, *Polymers, *Crystal structure, Mathematical models, Deformation, Polyethylene, Vibration, Relaxation, Reprints.

A model is proposed to account for the orientation of crystals in spherulites upon deforming a polymer. The model assumes affine deformation of the spherulite accompanied by three processes of crystal reorientation within the spherulite. These are tilting of molecular chains with respect to the plane of the lamellae, characterized by a parameter K, twisting of the lamallae about the spherulite radii described by eta, and rotation of the b crystal axis about the c axis characterized by a third parameter, P. Values of these parameters are fitted to measured orientation functions and compared with experimental measurements of the azimuthal variation of the intensities of the 110 and 200 crystal reflections from low-density polyethylene. Good agreement is found between the experimental and theoretically predicted intensity variation. Time-dependent experiments under relaxational and vibrational conditions are also treated by the theory. (Author)

AD-A011 040/3GA PC$5.25/MF$2.25
Naval Ship Research and Development Center Bethesda Md
Determining the Concentration of Oil in Water Samples by Infrared Spectrophotometry. Phase I: Sample Aging Study.
Evaluation rept.,
Stanley Finger, Harry Feingold, Ed Timko, and Sidney Orbach. Dec 74, 110p Rept no. NSRDC-4535
See also report dated Jan 75, AD-A011 041.

Descriptors: *Aging(Materials), *Oils, *Solutions(Mixtures), Fuel oil, Sea water, Degradation, Deterioration, Biodeterioration, Lubricating oils, Chemical analysis, Mathematical models.
Identifiers: Oily wastes, Spectroscopic analysis, *Oil pollution detection.

Oil in water samples of Naval Distillate Fuel Oil (NDFO) and Steam Turbine Lubricating Oil (MS 2190 TEP) at concentrations of 16 p/m and 100 p/m were studied to determine and quantify aging due to various types of degradation with time, under normal storage conditions. The samples were prepared individually from synthetic sea water and a quantity of oil which gave the desired concentration. The samples were analyzed at several intervals during an eight-week aging period. Oil concentration was determined by a method which is based on carbon tetrachloride solvent extraction and the infrared spectrophotometric measurements of the extract. Calibration curves relating the ab-

sorbance with oil concentration for the two oils were prepared from a measured quantity of oil in carbon tetrachloride. The purpose of the sample aging study was to obtain information for use in scheduling sample shipment and analysis in a forthcoming inter-laboratory study of the oil concentration measurement technique, as well as to estimate the allowable delay in sample analysis after field sampling.

AD-A011 064/3GA PC$3.25/MF$2.25
Texas Univ At Austin Dept of Chemistry
Dimerization of Ethylene to Cyclobutane,
Michael J. S. Dewar, and Steven Kirschner. 1 Dec 73, 3p AFOSR-TR-75-0749
Contract F44620-71-C-0119
Availability: Pub. in Jnl. of American Chemical Society, v96 p5246-5247 1974.

Descriptors: *Ethylene, *Dimers, *Cyclobutanes, Chemical reactions, Reaction kinetics, Theory, Reprints.
Identifiers: *Dimerization.

The dimerization of ethylene to cyclobutane has been studied using MINDO/3. The reaction is a simple concerted process the intermediate biradical being the transition state. The available experimental data are reinterpreted and shown to be completely consistent with our calculations. Lumomeric tetramethylene biradicaloids play a key role. (Author)

AD-A011 065/0GA PC$3.25/MF$2.25
Texas Univ At Austin Dept of Chemistry
Orbital Isomerism as a Controlling Factor in Chemical Reactivity,
Michael J. S. Dewar, Steven Kirschner, and Herbert W. Kollmar. 1 Dec 73, 4p AFOSR-TR-75-0748
Contract F44620-71-C-0119
Availability: Pub. in Jnl. of the American Chemical Society, v96 n16 p5240-5242, 7 Aug 74.

Descriptors: *Molecular isomerism, *Chemical reactions, *Molecular orbitals, Reprints.
Identifiers: Woodward Hoffmann Rules, Pericyclic reactions.

A simple MO treatment shows that pericyclic reactions violating the Woodward-Hoffmann rules, and consequently involving antiaromatic transition states, necessarily involve HOMO/LUMO crossings, this being a consequence of orbital topology, not orbital symmetry. This leads to a unification of the Woodward-Hoffmann and Evans approaches to pericyclic reactions and to an extension of the rules to acyclic systems. (Author)

AD-A011 109/6GA PC$3.25/MF$2.25
Idaho Univ Moscow Dept of Chemistry
New Hypofluorites Containing Nitrogen.
Final technical rept. 1 Apr 71-31 Dec 74,
Jean'ne M. Shreeve. 3 Jun 75, 17p
Contract N00014-71-C-0153
See also AD-743 136.

Descriptors: *Fluorine compounds, *Fluorides, Chemical reactions, Scientific research, Synthesis(Chemistry), Organic sulfur compounds, Phosphorus compounds, Peroxides, Amides, Imines, Fluorination.
Identifiers: Fluorine organic compounds, Chlorine fluoride (ClF), Tin organic compounds.

The report summarizes research activities in fluorine chemistry. Synthesis and reactions of a wide range of novel fluorides and organic fluorine compounds are reported. A list of publications from the 45 month contract is included.

COM-75-10636/9GA PC$3.25
California Univ., Davis. Dept. of Food Science and Technology.
Peroxide Oxidation of Tris to a Free Radical,
Patricia A. Murphy, James S. Lin, and Harold S. Olcott. 1 Jul 74, 4p NOAA-75042902
Grant NOAA-2-35208
Pub. in Archives of Biochemistry and Biophysics, v164 p776-777 1974.

Descriptors: *Oxidation, *Free radicals, Carbinals, Hydrogen peroxide.
Identifiers: *Propane diol/amino-hydroxymethyl, Reprints, Sea Grant program.

Tris (tris(hydroxmethyl)aminomethane) is used extensively in biochemical research as a buffer. During studies of the oxidation of some amino acids to nitroxides it was observed that oxidation of the Tris buffer itself gave a strong well-defined EPR signal, indicative of the presence of a free radical. This report explains the research and experiment undertaken concerning this thesis. in summary, it was found that Tris is oxidized to a free radical by peroxidetungstate, more readily at alkaline pH than at neutrality.

COM-75-10673/2GA PC$4.75/MF$2.25
Vanderbilt Univ., Nashville, Tenn. Dept. of Environmental and Water Resources.
Standardization of Methylmercury Analysis.
Technical rept.,
Peter A. Krenkel, and W. Dickinson Burrows.
Feb 75, 79p TR-35 NOAA-75051401
Grant NOAA-04-2-56-72
Sponsored in part by Tennessee Wildlife Resources Agency, Nashville.

Descriptors: *Chemical analysis, Colorimetric analysis, Gas chromatography, Solvent extraction, Papain, Mercury organic compounds, Standards, Calibration, Chromatographic analysis.
Identifiers: *Mercury/methyl, Atomic absorption spectroscopy, Thin layer chromatography.

In order to develop a simple, concise analytical technique for methylmercury, an investigation was made of existing methods; experiments were conducted to refine analysis by gas-liquid chromatography; and the resulting method was put forward in a form for easy use by laboratory technicians. A review of recent literature includes description of the use of colorimetric, gas-liquid chromatographic, atomic absorption spectrophotometric and thin layer chromatographic methods of measuring methylmercury and explains the extensive sample preparation necessary. It was found that simple treatment with papain had no effect on methylmercury recovery and benzene was the organic solvent preferred. Other reagents which proved most efficient were the bromide form of halide reagents and sodium thiosulfate for extracting the methylmercury into the aqueous phase. Methylmercury bromide and chloride were both more stable for use as standards than was the iodide. Distillation of the final benzene extract was found to be a practical means of increasing the methylmercury concentration, with about 10% of the mercury lost during each distillation.

COM-75-10680/7GA PC$3.25/MF$2.25
Vanderbilt Univ., Nashville, Tenn. Dept. of Environmental and Water Resources.
Standardized Methylmercury Analytical Procedure for Fish and Sediments.
Technical rept.,
Peter A. Krenkel, and W. Dickinson Burrows.
Feb 75, 22p TR-34 NOAA-75042202
Grant NOAA-04-2-56-72
Sponsored in part by Tennessee Wildlife Resources Agency, Nashville.

Descriptors: *Chemical analysis, Calibration, Gas chromatography, Solvent extraction, Mercury organic compounds, Enzymes, Extraction, Fishes, Sediments.
Identifiers: *Mercury/methyl.

The problem of methylmercury determination falls naturally into three steps: (1) liberation of the alkylmercury moiety from the environmental sample; (2) isolation of methylmercury from other liberated constituents; and (3) identification and estimation of the methylmercury derivative. The analytical method chosen is a modification of the procedure of TW Beak Associates; however, refinements have been made to produce the present scheme to increase the efficiency and simplicity of each step by variation of techniques and reagents. The advantages of a proteolytic enzyme to digest samples, different organic solvents, different halide reagents, varied volumes of reagents, peak height versus peak area measurement, and different methods of standard curve preparation; the stability of compounds for potential use as a standard; efficiencies of the extractions into the various solvents; and the possibility of increasing sensitivity by evaporating the final extract were evaluated in this report. It also presents a straightforward, simple approach for routine laboratory analysis of methylmercury in fish and sediments.

N75-21388/4GA PC$3.25/MF$2.25
Kanner (Leo) Associates, Redwood City, Calif.
Determination of Calcium, Barium, Zinc, Sulfur and Phosphorus in Liquid Hydrocarbons by X-Ray Fluorescence Using the Corrected Intensities Method.
J. Faucherre, B. Grubis, and R. Vielesage. 23 Apr 75, 18p NASA-TT-F-16255
Contract NASW-2481
Tran-Transl. Into English from Bull. Soc. Chim. France (Masson), No. 2, 1972 p 850-868.

Descriptors: *Chemical analysis, *Hydrocarbons, *X ray fluorescence, Absorption spectra, Barium, Calcium, Phosphorus, Sulfur, Wavelengths.

For abstract, see STAR 1313

PATENT-3 787 456 Not available NTIS
Department of Agriculture, Washington, D.C.
Vinyl Chloride Plastic Compositions and Certain Plasticizers Therefor.
Patent,
Robert R. Mod, Frank C. Magne, and Evald L. Skau. Filed 13 Sep 72, patented 22 Jan 74, 9p
PAT-APPL-288 340,
Supersedes PB-229 912.
Government-owned invention available for licensing. Copy of patent available Commissioner of Patents, Washington, D.C. 20231 $0.50.

Descriptors: *Plasticizers, *Patents, *Amides, Vinyl chloride resins, Synthesis(Chemistry), Aliphatic compounds.
Identifiers: Oleamide/N-benzyl-N-acetoxyethyl, PAT-CL-260-404.

This invention relates to certain compounds which are N-acyl derivatives of symmetrical or asymmetrical secondary amines, useful as plasticizers for vinyl chloride resins. More particularly, this invention relates to N, N-disubstituted long-chain aliphatic amides the acyl component of which if saturated is an alkanoic acyl containing from 10 to 18 carbon atoms, and if unsaturated is a monokalenoic acyl containing from 18 to 22 carbon atoms, the amide nitrogen in all cases being the nitrogen atom of a symmetrical or asymmetrical secondary, acyclic or alicyclic amine, said secondary amine being a substituted or unsubstituted acyclic or alicyclic amine.

PATENT-3 829 290 Not available NTIS
Department of Agriculture, Washington, D.C.
Reaction of Sodium Cellulosate with Mono- and Difunctional Epoxides in Non-Aqueous Media.
Patent,

Ralph J. Berni, Ruth R. Benerito, and Donald M. Soignet. Filed 29 Jun 72, patented 13 Aug 74, 5p PAT-APPL-267 313,
Government-owned invention available for licensing. Copy of patent available Commissioner of Patents, Washington, D.C. 20231 $0.50.

Descriptors: *Patents, *Cellulose ethers, *Synthetic fibers, Fabrics, Epoxy compounds, Sodium organic compounds, Durable press treating.
Identifiers: PAT-CL-8-120.

This invention relates to the chemical treatment of cellulosic textiles in non-aqueous media to yield cellulosic derivatives in the form of textiles which are useful in the permanent press field. More specifically this invention relates to the preparation of a cellulose fabric which contains a suitable quantity of sodium ion to be quickly thereafter reacted with a certain epoxide. Fibrous cellulose ethers have been prepared by a nonaqueous process comprising preparing a sodium cellulosate with suitable Cellulose I content in preparation for reaction with an epoxide to yield a derivative generally useful in the field of permanent press textiles.

PATENT-3 845 107 Not available NTIS
Department of Agriculture, Washington, D.C.
Phosphinidynetrimethanol Triacetate.
Patent,
Sigred B. Lanoux, Samuel E. Ellzey, Jr., George L. Drake, Jr., and Wilson A. Reeves. Filed 2 Mar 72, patented 29 Oct 74, 3p PAT-APPL-231 360,
Previously filed as PAT-APPL-66 084, 21 Aug 70.
Government-owned invention available for licensing. Copy of patent available Commissioner of Patents, Washington, D.C. 20231 $0.50.

Descriptors: *Patents, *Fire resistant textiles, *Phosphines, Fire resistant coatings, Synthesis(Chemistry), Cotton fabrics, Acetates.
Identifiers: Acetic acid/(phosphinidynetrimethyl-ester)-tri, PAT-CL-260-488-J.

The patent concerns the preparation of phosphinidynetrimethanol triacetate by reacting tetrakis(hydroxymethyl)phosphonium chloride with acetic anhydride in pyridine at room temperature. Cotton and other cellulosic textiles were treated with the product produced by the new process and found flame retardant.

PB-241 511/5GA PC$4.25/MF$2.25
Harvard Univ., Cambridge. Dept. of Sanitary Chemistry.
Formation of Halogenated Organics by Chlorination of Water Supplies.
Final rept. 1 Nov 74-25 Mar 75,
J. Carrell Morris, and Gordon McKay. 26 Mar 75, 59p EPA/600/1-75-002

Descriptors: *Chlorination, *Water treatment, *Chlorine organic compounds, Chemical reactions, Reviews, Activated carbon treatment, Synthesis(Chemistry), Addition reactions, Feedwater treatment, Phenols.

Available literature on the formation of halogenated organic compounds during the chlorination of water supplies has been reviewed critically. Types of organic compounds likely to be encountered in natural waters have been surveyed and various known or prospective reactions of dilute aqueous chlorine with these types of compounds have been discussed. It is concluded that two principal types of chlorination reaction are expected: (1) electrophilic aromatic chlorination as in the long-known formation of chlorophenols; and (2) electrophilic chlorine addition to activated double bonds like that of enolacetone. Chloroform or other haloforms may occur as end products of exhaustive chlorination in either case. General substitution reactions of chlorine are unlikely however. Possible methods for minimizing the concentrations of halogenated organic compounds in municipal supplies have been outlined. These include pretreatment methods, such as coagulation or preozonation to reduce amounts of precursors to the halogenated compounds, and posttreatment methods, such as carbon adsorption or aeration to remove halogenated compounds after their formation. Needed research has been described.

PB-242 128/7GA PC$3.75/MF$2.25
Bureau of Mines, Bartlesville, Okla. Bartlesville Energy Research Center.
Crude Oil Spills Research. An Investigation and Evaluation of Analytical Techniques.
Research rept.,
C. A. Wilson, E. P. Ferrero, and H. J. Coleman. Apr 75, 34p BuMines-RI-8024

Descriptors: *Chemical analysis, *Crude oil, Infrared spectroscopy, Spectroscopic analysis, Gas chromatography, Mass spectroscopy, Nuclear magnetic resonance, Ultraviolet spectroscopy, Performance evaluation, Hydrocarbons, Infrared spectra, Vanadium, Nickel.
Identifiers: Oil spills, *Oil pollution detection, Atomic absorption spectroscopy.

The Bureau of Mines started a continuing program to investigate and evaluate analytical techniques to assist governmental agencies to select simple, rapid, reliable methods for crude oil spill identification. Six crude oil samples were analyzed to evaluate gas-liquid chromatography, atomic absorption spectrophotometry, infrared spectroscopy, sulfur and nitrogren determinations, mass spectrometry, nuclear magnetic resonance spectroscopy, and ultraviolet spectrophotometry. Samples were studied from various selected fields which are likely to be involved in oceanic transport. Gas-liquid chromatographic analysis, atomic absorption spectrophotometric analysis, and sulfur-nitrogen determinations are recommended as the most useful of the techniques investigated.

7D. Physical Chemistry

AD-A010 555/1GA PC$3.25/MF$2.25
IBM Thomas J Watson Research Center Yorktown Heights N Y
Ordered Organic Systems and Molecular Rectifiers.
Quarterly rept. no. 1, 1 Jan-31 Mar 75,
B. A. Scott. 31 Mar 75, 10p
Contract DAHC04-75-C-0010, ARPA Order-2870

Descriptors: *Thin films, *Fatty acids, Stearates, Adsorption, Salts, Magnetic properties, Surface properties, Synthesis(Chemistry), Rectifiers, X ray diffraction, Molecular structure, Molecules.
Identifiers: Magnetic ordering.

The major effort of this research program is the fabrication and study of organic and organometallic molecular arrays in thin film form. The films are prepared by the Langmuir-Blodgett technique, which permits the deposition of one or two monolayers at a time. Specifically, the authors have developed the necessary techniques to deposit layers of fatty acids and their salts by this method and are engaged in the determination of their structural and magnetic parameters. The intent of these studies is to enable the construction of two-dimensional arrays whose structures are completely characterized, and to use this knowledge in fabricating two-dimensional magnetic arrays to test various models of magnetic ordering. In addition, an ambitious synthetic organic program is underway with the aim of synthesizing a molecule with asymmetric electron tunneling characteristics. It is planned to create monolayers of such 'molecular rectifiers' using the Langmuir-Blodgett technique and to study their electrical characteristics.

AD-A010 596/5GA PC$3.25/MF$2.25
Aerospace Corp El Segundo Calif Lab Operations
Electronic Excitation in Collisions of Fast Protons and Hydrogen Atoms with NO, N2O, CO2, and OCS.
Interim rept.,
John H. Birely, and Peter A. Johnson. 15 Apr 75, 20p Rept no. TR-0075(9270-01)-7 SAMSO-TR-75-125
Contract F04701-74-C-0075

Descriptors: *Nitrogen oxides, *Carbon dioxide, *Emission spectra, Electronic states, Proton bombardment, Hydrogen, Atoms, Particle collisions, Excitation, Spectrum analysis.
Identifiers: Hydrogen atoms, *Collisional excitation, *Carbonyl sulfide.

Analyses of radiation in the 115- to 850-nm range produced by collisions of 10 to 25 keV and H(+) and H with NO, N2O, CO2, and OCS under thin target conditions have been carried out. The most prominent features for the polyatomic targets are emitted by excited parent molecule ions. Except in the case of OCS, for which weak CO(+) bands were detected, the cross sections for dissociative excitation to yield diatomic fragments are extremely small. These observations in conjunction with results obtained elsewhere for other projectile ions provide further evidence that, in the competition among allowed excitation channels, details of the electronic structure of the collision partners override energy considerations. For an NO target, the NO(+) bands are observed and, for all of the molecules studied, atomic lines resulting from dissociative excitation are prominent in the spectra.

AD-A010 599/9GA PC$3.75/MF$2.25
Aerospace Corp El Segundo Calif Lab Operations
Configuration Interaction Studies of the Excited States of Water.
Interim rept.,
Nicholas W. Winter, William A. Goddard, III, and Frank W. Bobrowicz. 15 Apr 75, 31p Rept no. TR-0075(9270-01)-6 SAMSO-TR-75-129
Contract F04701-74-C-0075

Descriptors: *Water, *Electronic states, Spectrum analysis, Molecular orbitals, Electron transitions, Excitation, Molecular energy levels.
Identifiers: *Configuration interaction method.

The results of extensive configuration interaction studies of 16 excited states of water are reported. These states can be accurately described as corresponding to excitation from one of the highest two molecular orbitals (1b1 or 3a1) of the ground state into either the 3s or one of the three 3p Rydberg orbitals. The results provide the most accurate and consistent treatment of these states of date (within 0.1 eV for all known transitions) form a reliable basis for the assignment of the photon and electron impact spectra of H2O.

AD-A010 608/8GA PC$3.25/MF$2.25
Franklin Inst Swarthmore Pa Bartol Research Foundation
Alkali-Metal Adsorption on Metal Surfaces,
J. M. Chen. 1974, 19p ARO-8906.12-P
Grant DA-ARO-D-31-124-73-G124
Availability: Pub. in Jnl. of the Franklin Inst. v298 n4 p255-269 Oct 74.

Descriptors: *Metals, *Surfaces, *Tungsten, *Sodium, *Adsorption, Alkali metals, Cesium, Oxygen, Electron diffraction, Reprints.

Results of low energy electron diffraction and work function studies of alkali-metal adsorption on metal surfaces are presented. The adsorption of Na on W(112) surfaces resulted in the formation of one-dimensionally periodic arrays which underwent a continuous compression with increasing Na coverage. Coadsorption of Na with O resulted in a W-O-Na double layer, regardless of the sequence of deposition of the adsorbates. A similar behavior was found for (C8 + O)/W(100), (C8 + H)/W(100) and (C8 + O)/W(112) systems. It was also found that the underlying electronegative layer increased the interaction among alkali atoms and improved their long-range order. Experimental work function data of alkali-covered surfaces have been compared with results of recent theoretical calculations. The data indicate that coadsorption of O or H on the surface has the effect of displacing the alkali atoms away from the substrate and reducing their energy level width. A strong interaction of adsorbates with substrate atoms was observed in the case of Cs and O coadsorption on Ni(100) surfaces. The presence of a fractional monolayer of C8 increased the oxidation of a Ni(100) surface by about thirteenfold. The NiO formed in two crystallographic orientations depending on the initial Cs coverage. (Author)

AD-A010 609/6GA PC$3.25/MF$2.25
Yale Univ New Haven Conn Mason Lab
Negative Ion S Formation by Dissociative Attachment in OCS and CS2,
J. P. Ziesel, G. J. Schulz, and J. Milhand. 17 Sep 74, 6p ARO-11041.8-P
Grant DA-ARO-D-31-124-73-G66
Availability: Pub. in Jnl. of Chemical Physics, v62 n5 p1936-1940, 1 Mar 75.

Descriptors: *Sulfides, *Sulfur, *Dissociation, *Carbon disulfide, *Oxygen compounds, Electron beams, Electrons, Cross sections, Molecules, Linearity, Vibration, Reprints.
Identifiers: Triatomic molecules, Dissociative attachment.

The electron energy dependence and magnitude of the cross section for formation of S(-) from OCS and CS2 are studied using monoenergetic electron beams. The dissociative attachment cross sections exhibit a near-vertical onset followed by structure at higher energies.

AD-A010 610/4GA PC$3.25/MF$2.25
Pittsburgh Univ Pa Dept of Physics
Variation of Electron-NO(+)-Ion Recombination Coefficient with Electron Temperature,
Chou-Mou Huang, Manfred A. Biondi, and Rainer Johnsen. 1 Oct 74, 7p ARO-11166.4-P
Grant DA-ARO-D-31-124-73-G79
Availability: Pub. in Physical Review A, v11 n3 p901-905 Mar 75.

Descriptors: *Nitrogen oxides, Ionosphere, Electron density, Recombination reactions, Ions, Temperature, Microwaves, Mass spectrometers, Heating, Electrons, Reprints.

The electron-temperature dependence of the recombination of mass-identified NO ions with electrons is studied by means of a microwave-afterglow/mass-spectrometer apparatus employing microwave heating of the electrons.

AD-A010 613/8GA PC$3.25/MF$2.25
North Carolina Univ Chapel Hill Dept of Chemistry
Oxidation-State and Electron-Transfer Properties of Mixed-Valence 1,1'-Polyferrocene Ions,
Gilbert M. Brown, Thomas J. Meyer, D. O. Cowan, C. LeVanda, and F. Kaufman. 31 Jul 74, 7p ARO-11167.2-C
Grants DA-ARO-D-31-124-73-G104, DAHC15-73-G-0009
Availability: Pub. in Inorganic Chemistry, v14 n3 p506-511 1975.

Descriptors: *Ferrocenes, *Polymers, *Oxidation, *Electron transfer, Electrochemistry, Ions, Valence, Reprints.
Identifiers: Ferrocenium.

The oxidation state properties of the compounds biferrocene, 1,1'-terferrocene, and 1,1'-quaterferrocene have been investigated using electrochemical techniques. In the polymeric compounds all of the ferrocene groups are oxidizable to ferricenium at distinct potentials. The values of the potentials can be predicted in some cases using ferrocenyl substituent effects. Partial oxidation gives a series of discrete mixed-valence ions. The mixed-valence ions can exist as a series of oxidation state isomers which differ with regard to the site of oxidation. Electron transfer between different oxidation state sites in the polymeric chains is unsymmetric giving energetically nonequivalent isomers. The unsymmetrical nature of electron transfer is reflected in the properties of intervalence-transfer (IT) absorptions in the near-infrared spectra. The existence of energetically equivalent and nonequivalent oxidation state isomers may also influence such properties as the intensities of IT bands, the presence of statistical effects in measured reduction potentials, and rates of intramolecular electron transfer. (Author)

AD-A010 614/6GA PC$3.25/MF$2.25
North Carolina Univ Chapel Hill Dept of Chemistry
Reversible Electron Transfer to the Nitrosyl Group in Ruthenium Nitrosyl Complexes,
Robert W. Callahan, Gilbert M. Brown, and Thomas J. Meyer. 15 Oct 74, 3p ARO-11167.7-C
Grants DA-ARO-D-31-124-73-G104, DAHC15-73-G-0009
Availability: Pub. in Jnl. of the American Chemical Society, v97 p894-895 1975.

Descriptors: *Ruthenium compounds, *Complex compounds, *Electron transfer, *Nitroso compounds, Chemical bonds, Electrochemistry, Reduction(Chemistry), Oxidation, Acetonitrile, Reprints.

Nitrosyl complexes have been found to undergo electrochemically reversible one-electron reduction reactions in acetonitrile in the potential range 0.2-0.6 V and a second irreversible one-electron reduction at more cathodic potentials. (Author)

AD-A010 664/1GA PC$3.25/MF$2.25
Edgewood Arsenal Aberdeen Proving Ground Md
A Completely Automated Fluorometric Blood Cyanide Method: A Specific Assay Incorporating Dialysis and Distillation.
Technical rept. Mar 72-Jun 73,
William A. Groff, Samuel A. Cucinell, Pasquale Vicario, and Andris Kaminskis. May 75, 15p
Rept no. EB-TR-75010

Descriptors: *Blood analysis, *Cyanides, Blood chemistry, Poisoning, Fluorometers, Chemical analysis, Diagnosis(Medicine), Microanalysis, Automation, Test methods, Dialysis, Distillation.
Identifiers: *Fluorometric analysis, Autoanalyzers.

The automated blood cyanide method described in this report was developed to meet laboratory requirements for studies of cyanide poisoning and its therapy. The procedure is specific and sufficiently sensitive to detect 0.5 micrograms of cyanide ion per milliliter of blood. Heparinized whole blood samples collected by syringe or Vacutainer can be assayed at a rate of 20 per hour. Venous or arterial blood can be monitored continuously by means of a double lumen catheter.

AD-A010 677/3GA PC$3.25/MF$2.25
California Inst of Tech Pasadena Arthur Amos Noyes Lab of Chemical Physics
Electronic Spectra of Substituted Cyanocobaltate(III) Complexes,
Vincent M. Miskowski, and Harry B. Gray. 27 Jun 74, 6p Rept no. Contrib-4909 ARO-8389.14-C
Grant DA-ARO-D-31-124-G1113
Availability: Pub. in Inorganic Chemistry, v14 n2 p401-405 1975.

Descriptors: *Cyanides, *Cobalt compounds, *Complex compounds, *Absorption spectra, Charge transfer, Excitation, Metalorganic compounds, Reprints.
Identifiers: *Electronic spectra.

AD-A010 679/9GA PC$3.25/MF$2.25
Columbia Radiation Lab New York
Critical Exponents for the Shear Viscosity of He4 at T sub Lamda,
R. Biskeborn, and R. W. Guernsey, Jr. 30 Dec 74, 4p
Contract DAAB07-74-C-0341
Availability: Pub. in Physical Review Letters, v34 n8 p455-458, 24 Feb 75.

Descriptors: *Liquid helium, Viscosity, Transition temperature, Superfluidity, Chemical equilibrium, Ions, Oscillation, Walls, Reprints.

For many years there has been a question as to what singularity, if any, occurs in the viscosity of liquid He4 at its superfluid transition T sub lamda. A definitive theoretical prediction has not yet been made and definitive measurements have proved elusive. We report here a detailed measurement of the singularity, and we determine the critical exponents above and below T sub lamda.

AD-A010 688/0GA PC$3.25/MF$2.25
University of Southern California Los Angeles Dept of Chemistry
Relaxation of Damped Debye Lattices in the Primary Transition Region,
J. J. Aklonis, and V. B. Rele. 1974, 14p ARO-11335.1-C
Contract DAHC04-73-C-0012
Availability: Pub. in Jnl. of Polymer Science, Part C. Polymer Symposia, n46 p127-138 1974.

Descriptors: *Polystyrene, *Viscoelasticity, *Stress relaxation, Damping, Solubility, Plasticizers, Transitions, Phase studies, Creep, Reprints.
Identifiers: *Debye lattices.

A brief review of the literature concerning damped Debye lattices as models of viscoelastic relaxation in the primary transition region is presented. It has been observed that polystyrene plasticized with dioctylsebacate behaves in a fashion which is inconsistent with previous predictions based on this model. Suggested is an expanded interpretation of the model which predicts that plasticizers with solubility parameters appreciably different from that of the polymer will behave differenlty from diluents with the same solubility parameter as the polymer. The results of further experimentation are in accord with this new prediction. This work supports the contention that the damped Debye lattice is a viable model and clearly demonstrates that interchain interactions are important in determining physical properties in the primary transition region.

AD-A010 690/6GA PC$3.25/MF$2.25
California Inst of Tech Pasadena Arthur Amos Noyes Lab of Chemical Physics
The Level Shift Operator and Its Effect on Line Shapes in Vibronically Perturbed Spectra,
Charles A. Langhoff, and G. Wilse Robinson. 1 Jun 74, 11p ARO-11783.5-C
Contract DAHC04-74-C-0010

Availability: Pub. in Molecular Physics, v29 n2 p613-622 1975.

Descriptors: *Molecular vibration, Molecules, Resonance, Operators(Mathematics), Green's function, Eigenvectors, Hamiltonian, Reprints.
Identifiers: Level shift.

This paper discusses the role of the level shift operator in vibronically mixed molecular resonances. The effect of this operator on the shapes of resonances is particularly important when the resonances contain resolved structure. (Author)

AD-A010 703/7GA PC$3.25/MF$2.25
Army Missile Research Development and Engineering Lab Redstone Arsenal Ala Advanced Systems Concepts Office
Doppler and Collision Broadening Effects in the Profile of Spectral Lines.
Technical rept.,
B. W. Fowler. 17 Mar 75, 19p Rept no. RF-75-1

Descriptors: *Spectral lines, Spectrum analysis, Shape, Mathematical models.
Identifiers: *Collision broadening, *Doppler broadening, Line broadening, Voight profiles.

The physical contributions causing various types of spectral lines are described. The conventional combined effects or Voigt profile is derived. A mathematically consistent line shape theory is proposed and equations are derived. Applications of the resultant Voigt, Sung, and Fowler theory are presented and its relevance discussed.

AD-A010 748/2GA PC$4.75/MF$2.25
Carnegie-Mellon Univ Pittsburgh Pa Mellon Inst of Science
Inelastic Electron Scattering,
Edwin N. Lassettre, and Ausma Skerbele. 1974, 87p AFOSR-TR-75-0425
Grant AF-AFOSR-1495-68, Contract AT(30-1)-4180
Availability: Pub. in Methods of Experimental Physics, v3 Molecular Physics, 2nd Edition, ptB p868-951 1974.

Descriptors: *Electron spectroscopy, *Electron scattering, *Transport properties, *Inelastic scattering, Oscillation, Cross sections, Monochromators, Spectrometers, Intensity, Reprints.

Experimental methods are discussed for obtaining electron impact spectra and measuring inelastic collision cross sections. The theoretical interpretation of data on generalized oscillator strengths is discussed. A review with 192 references. (Author)

AD-A010 811/8GA PC$3.75/MF$2.25
Mission Research Corp Santa Barbara Calif
Coulomb-Born Electron Impact Excitation Cross-Sections for Atmospheric Ions.
Topical rept. 15 Feb-31 Oct 74,
J. A. Reefer. 26 Mar 75, 36p Rept no. MRC-R-159 DNA-3575T
Contract DNA001-74-C-0212

Descriptors: *Nitrogen, *Oxygen, *Electron nuclear cross sections, Ions, Electron energy, Excitation, Particle collisions, Cross sections.
Identifiers: *Excitation cross sections, Electron collisions.

Coulomb-Born electron impact excitation cross-sections for thirty ground state transitions of the first three ions of nitrogen and oxygen have been computed for electron energies ranging from the threshold to 300 eV. Effective Gaunt factors for use in estimating cross-sections semi-empirically were also calculated and the reliability of such estimations is discussed. Comparisons with more elaborate theoretical cross-section calculations indicate that the Coulomb-Born results appear to over-estimate the cross-section near the threshold for intra-shell transitions, but not for the inter-shell transitions.

AD-A010 838/1GA PC$3.25/MF$2.25
State Univ of New York Stony Brook Dept of Chemistry
Dynamics of Critical Fluctuations of a Macromolecular Solution,
Q. H. Lao, B. Chu, and N. Kuwahara. 9 Sep 74, 9p ARO-8014.29-C
Grant DA-ARO-D-31-124-73-G30
Availability: Pub. in Jnl. of Chemical Physics, v62 n6 p2039-2044, 15 Mar 75.

Descriptors: *Light scattering, *Hydrodynamics, *Viscosity, *Polystyrene, Cyclohexanes, Solutions(General), Reprints.

AD-A010 839/9GA PC$3.25/MF$2.25
Texas Univ At Austin Dept of Chemistry
Electrogenerated Chemiluminescence: Determination of the Absolute Luminescence Efficiency in Electrogenerated Chemiluminescence: 9,10-Diphenylanthracene-Thianthrene and Other Systems,
Csaba P. Keszthelyi, Nurhan E. Tokel-Takvoryan, and Allen J. Bard. 13 Jun 74, 8p ARO-8352.27-C
Grant DA-ARO-D-31-124-73-G34
Availability: Pub. in Analytical Chemistry, v47 n2 p249-256 Feb 75.

Descriptors: *Chemiluminescence, *Anthracenes, *Sulfur heterocyclic compounds, Polycyclic compounds, Rubrenes, Excitation, Electrochemistry, Reprints.

The efficiency of electrogenerated chemiluminescence (ECL) (Phi sub ecl) of several systems is reported using both potassium ferrioxalate actinometry and calibrated-photodiode measurements. Experimental methods and necessary corrections in (Phi sub ecl)-determinations are discussed and ECL in mixed solvent systems (e.g., acetonitrile (ACN)-benzene-toluene) is described. The following (Phi sub ecl) values were found: 9,10-diphenylanthracene (DPA) (7.8mM), thianthrene (TH) (11.1mM) (in mixed solvent): 20% peak efficiency, 5% for several hours; DPA (7.7mM, in mixed solvent) 4%; DPA (2.20mM, in mixed solvent) 8%; rubrene (in benzonitrile) 1.9%. Good agreement between pulsed stationary electrode and rotating ring-disk electrode measurements and between actinometric and photodiode determinations was found. (Author)

AD-A010 880/3GA PC$3.25/MF$2.25
Carnegie-Mellon Univ Pittsburgh Pa Dept of Physics
Magnetic Interactions in NiSnCl6-6H2O and Related Salts.
Technical rept.,
S. A. Friedberg, M. Karnezos, and D. Meier. 1 Jun 75, 7p Rept no. TR-1
Contract N00014-75-C-0771

Descriptors: *Nickel compounds, *Metal complexes, *Hydrates, Single crystals, Magnetic properties, Chlorides, Specific heat, Tin compounds, Molecular energy levels, Electronic states, Bromides, Platinum compounds, Palladium compounds.
Identifiers: Nickel tin chlorides, Magnetic ordering.

Heat capacities and low field magnetic susceptibilities of single crystal NiSnCl6-6H2O and six other isostructural Ni(+2) compounds have been measured down to 0.05 K. In NiSnCl6-6H2O, NiPdCl6-6H2O, NiPtCl6-6H2O, NiPtBr6-6H2O and NiPtI6-6H2O the S = 1 ground state of the (Ni(H2O)6)(+2) complex is split into a lower singlet and an upper doublet. Spin coupling in these compounds is subcritical and of antiferromagnetic sign. In NiTiF6-6H2O and NiZrF6-6H2O the zero field splitting leaves the doublet lowest, interactions are ferromagnetic, and ferromagnetic ordering occurs below Tc=0.17 K.

AD-A010 883/7GA PC$3.75/MF$2.25
Utah Univ Salt Lake City Dept of Chemistry
Brillouin - Rayleigh Scattering Studies of Polypropylene Glycol. II.
Technical rept.,
C. H. Wang, and Y. Y. Huang. 2 Jun 75, 27p Rept no. TR-8
Contract N00014-75-C-0908
See also report dated 7 Aug 74, AD-783 716.

Descriptors: *Rayleigh scattering, *Light scattering, Density, Brillouin zones, Molecular weight, Temperature, Glycols, Polymers, Laser beams, Hypersonic velocity, Modulus of elasticity, Acoustic velocity, Interferometry, Acoustic attenuation.
Identifiers: *Polyoxypropylene, *Brillouin scattering.

A comprehensive Brillouin scattering experimental study of polypropylene glycol (PPG), average molecular weight of 1025, 2025 and 4000, has been carried out. The hypersonic velocity, attenuation coefficient, the modulus of elasticity and the Landau-Placzek ratio have been obtained as a function of temperature for each polymer. The PPG 425 data reported earlier are also included for comparison. For all the quantities measured, only the Landau-Placzek ratio (below ambient temperature) is molecular weight dependent, the hypersonic velocity, attenuation coefficient and elastic modulus are found to be independent of molecular weight in the present 425-4000 weight range. The differences in the Landau-Placzek ratio between the different polymers are attributed to different degree of frozen-in density fluctuations due to the difference in the medium's vicosity; the mechanism of structural relaxation is not sufficient to explain the increase of the Landau-Placzek ratio of each polymer below ambient temperature. The present results on the sound velocity and attenuation can be satisfactorily fit to a theory developed by Isakovich and Chaban, who have modeled the highly viscous liquid as a microinhomogeneous medium.

AD-A010 893/6GA PC$3.25/MF$2.25
Columbia Univ New York Dept of Chemistry
Beam-Gas Chemiluminescent Reactions of Eu and Sm with O3, N2O, NO2 and F2,
C. R. Dickson, and R. N. Xare. 21 Nov 74, 13p ARO-11436.5-P
Grant DA-ARO-D-31-124-73-G147
Availability: Pub. in Chemical Physics, v7 n3 p361-370 Mar 75.

Descriptors: *Chemiluminescence, Chemical reactions, Samarium, Europium, Nitrogen oxides, Molecular beams, Transport properties, Dissociation, Ozone, iron, Reprints.

AD-A010 898/5GA PC$3.25/MF$2.25
Cornell Univ Ithaca N Y Dept of Chemistry
Collisional Activation Spectra of the (C9H11O)(+) Ion from 2-Methyl-2-Phenylpropane-1,3-Diol,
N. M. M. Nibbering, T. Nishishita, C. C. Van de Sande, and F. W. McLafferty. 10 Jul 74, 7p ARO-8246.14-C
Grant DA-ARO-D-31-124-72-G180
Availability: Pub. in Organic Mass Spectrometry, v9 p1059-1061 1974.

Descriptors: *Propanols, *Molecular ions, *Acetones, *Mass spectrometry, Particle collisions, Protons, Ionization, Phenyl radicals, Reprints.
Identifiers: Protonation, *Rearrangement reactions.

Collisional activation spectra show that the (C9H11)(+) ion formed by loss of CH2OH from the title compound has rearranged to the protonated phenylacetone structure. (Author)

AD-A010 901/7GA PC$3.25/MF$2.25
Yale Univ New Haven Conn Dept of Physics
Orientational Order Measurements near a Possible Nematic-Smectic-A Tricritical Point.
Technical rept. Sep 74-Aug 75,
Terrence J. McKee, and James R. McColl. 16 Dec 74, 6p Rept no. TR-12
Contract N00014-67-A-0097-0013
Availability: Pub. in Physical Review Letters, v34 n17 p1076-1080, 28 Apr 75.

Descriptors: *Phase transformations, *Liquid crystals, Nuclear magnetic resonance, Orientation(Direction), Reprints.
Identifiers: Phase transition.

AD-A010 902/5GA PC$3.25/MF$2.25
Yale Univ New Haven Conn Dept of Engineering and Applied Science
Phase Transitions in a Fluid of Biaxial Particles.
Technical rept. Jun 70-Aug 75,
Richard S. Alben. 22 Dec 72, 5p Rept no. TR-13
Contract N00014-67-A-0097-0013, Grant DA-ARO-D-31-124-72-G169
Availability: Pub. in Physical Review Letters, v30 n17 p778-781, 23 Apr 73.

Descriptors: *Phase transformations, *Liquid crystals, *Phase diagrams, Particles, Models, Fluids, Criticality, Interactions, Reprints.
Identifiers: *Phase transitions, Biaxial particles.

A model is solved for a fluid of biaxial particles within a type of mean-field approximation. The results suggest that phase diagram of such a fluid exhibits a special critical point where two second-order critical lines meet a first-order phase boundary in a sharp cusp. The features of the phase diagram suggest a new way to look for critical phase transitions and biaxial phases in liquid crystals. (Author)

AD-A010 992/6GA PC$3.25/MF$2.25
North Carolina Univ Chapel Hill William R Kenan Jr Labs of Chemistry
Two-Component Unimolecular Decay Rates of Energy Selected Metastable Ions.
Tomas Baer, Arthur S. Werner, and Bilin P. Tsai. 2 Jan 75, 5p ARO-10200.9-C
Grant DA-ARO-D-31-124-72-G20
Availability: Pub. in Jnl. of Chemical Physics, v62 n6 p2497-2499, 15 Mar 75.

Descriptors: *Ions, *Metastable state, *Photoionization, *Decay, *Decomposition, Fragmentation, Spectroscopy, Butenes, Reprints.

A photoelectron-photoion coincidence technique was developed to measure absolute unimolecular fragmentation rates of metastable ions with selected internal energies. An initial investigation of the metastable decomposition, C4H6(+) yields C3H3(+)+CH3, indicated that those rates at a given energy are characterized by a single unimolecular rate constant which increases with increasing C4H6(+) internal energy. In contrast to that result, the finding of a number of unimolecular reactions which in the vicinity of threshold preceed by two distinct rates to form identical products are reported. The reactions are HC1 loss from C2H5Cl(+) and from C1CH2CH2Cl(+), and C1 loss from CHCCH2C1(+).

AD-A010 995/9GA PC$3.25/MF$2.25
California Univ Santa Barbara Dept of Physics
Generalized Ginzburg-Landau Theory of Pseudo-One-Dimensional Systems,
D. J. Scalapino, Y. Imry, and P. Pincus. 19 Aug 74, 8p ARO-10409.12-P
Grant DA-ARO-D-31-124-72-G74
Availability: Pub. in Physical Review B, v11 n5 p2042-2048, 1 Mar 75.

Descriptors: *Phase transformations, Chemical reactions, Magnesium compounds, Chlorides, Interactions, Coupling(Interaction), Mathematical models.
Identifiers: One dimensional systems.

A generalized Ginzburg-Landau theory is suggested to describe the phase transition of an array of weakly coupled pseudo-one-dimensional chains. Using a mean-field approximation, the coupled-chain problem is reduced to that of a single chain in an effective field. The finite-range correlations which develop along the chain are treated using exact one-dimensional solutions. The results obtained are then used to construct a generalized Ginzburg-Landau theory. It is argued that this approach provides a means of treating the remaining slowly varying long-range fluctuations. Results are given for a variety of arrays consisting of Ising, classical Heisenberg, real and complex Psi to the 4th power chains.

AD-A010 996/7GA PC$3.25/MF$2.25
Pennsylvania State Univ University Park Dept of Chemistry
Vaporization of Solids: Evidence for a Zipper Mechanism in the Retarded Vaporization of Arsenic,
Carl A. Hultman, and Gerd M. Rosenblatt. 25 Nov 74, 5p ARO-4847.30-C
Grant DA-ARO-D-31-124-72-G91
Availability: Pub. in Science, v188 p145-147, 11 Apr 75.

Descriptors: *Vaporization, *Arsenic, *Crystal defects, Solids, Reprints.

Recent observations indicate that the rate of evaporation of elemental arsenic into a vacuum is determined by the rate of formation, at screw dislocations, of kinks in ledges of molecular height. Once formed, a kink advances along the ledge, which makes a continuous spiral ramp outward from the dislocation, until the ledge terminates. A kink advances by releasing As4 molecules from the ledge. A given kink releases almost 1,000,000 As4 molecules before the next kink is initiated. (Author)

AD-A011 003/1GA PC$3.25/MF$2.25
Cornell Univ Ithaca N Y Dept of Chemistry
Internal Energy of Product Ions Formed in Mass Spectral Reactions. The Degrees of Freedom Effect,
P. F. Bente, III, F. W. Lafferty, D. J. McAdoo, and C. Lifshitz. 28 Jun 74, 11p ARO-8246.15-C
Grants DA-ARO-D-31-124-72-G180, PHS-GM-16609
Availability: Pub. in Jnl. of Physical Chemistry, v79 n7 p713-721 1975.

Descriptors: *Ions, *Energy, *Mass spectrometry, Metastable state, Degrees of freedom, Secondary, Reprints.

AD-A011 027/0GA PC$3.25/MF$2.25
Defence Research Establishment Ottawa (Ontario)
Studies Related to the Low Temperature Recharge of the Lead-Acid System.
Technical note,
Christopher L. Gardner, and Francois Rocheleau. Jan 75, 23p Rept no. DREO-TN-75-1

Descriptors: *Lead acid batteries, Electrodes, Temperature, Sulfuric acid, pH factor, Concentration(Composition), Canada.
Identifiers: *Battery charging, Lead oxides.

A study has been made of the effects of temperature and sulphuric acid concentration on the formation of persulphuric acid at a lead dioxide electrode and also the recharge properties of the electrode. The effect of electrolyte pH has also been examined. Based on these results some conclusions have been drawn as to the nature of the low temperature recharge problem of the lead-acid battery.

AD-A011 028/8GA PC$3.25/MF$2.25
Defence Research Establishment Ottawa (Ontario)
The Kinetics of the PbSO4/PbO2 Electrode at Low Temperatures,
Eugene M. L. Valeriote, and Lloyd D. Gallop. Apr 75, 24p Rept no. DREO-R-717
Presented at the International Power Sources Symposium (9th) Brighton (England) Sep 74. Summary in French.

Descriptors: *Electrodes, *Electrochemistry, Reaction kinetics, Potentiostatic techniques, Surface chemistry, Nucleation, Oxidation, Canada.
Identifiers: *Lead sulfates, *Lead oxides.

Direct and alternating current potentiostatic and potentiodynamic measurements were applied to the study of lead dioxide formation in sulphuric acid at temperatures from -50C to 0C. The initial oxidation reaction kinetics were found to be controlled by two dimensional nucleation and growth, followed by diffusion through the completed surface layer. From the model and derived results, the heights of the nuclei were determined as a function of temperature and applied potential from both the linear scan voltammetry and potential-step methods, the diffusion parameters of the rate controlling step were obtained. These results permit an improved description of the sequential anodic oxidation processes.

AD-A011 031/2GA PC$3.75/MF$2.25
Sussex Univ Brighton (England)
The Influence of Substitution on the Formation of Excited Singlet States from the Decomposition of Dioxetanes.
Final technical rept.,
Frank McCapra, Chris Zaklika, and John Gilmore. Apr 75, 30p
Contract DAJA37-74-C-1209

Descriptors: *Decomposition, *Chemiluminescence, Chemical structure, Polycyclic compounds, Oxygen heterocyclic compounds, Reaction kinetics, Excitation, Electronic states, Synthesis(Chemistry), Organic solvents.
Identifiers: *Dioxetanes, Reaction rates, Solvent effects.

This work was designed to discover whether changes in substitution in dioxetanes would alter the rates of decomposition and the proportion of excited singlet products formed. Thirteen dioxetanes were synthesised and their decomposition studied by monitoring the light emission which accompanied the formation of carbonyl products. It was found that substitution did indeed affect the rate of decomposition, and in the dioxetane derived from benzylidene acridan, remarkably high yields of singlet excited states were obtained. However, it was extremely difficult to produce consistent results, and it was shown that the difficulties were not due to induced decompositon or transition metal catalysis. A very thorough investigation of the effect of solvent was undertaken, incidentally establishing the reliability of the central observations. Highly electron-donating substituents increase the rate of decomposition and that this rate enhancement is accompanied, in one case in particular, by excited singlet yields of about 30%.

AD-A011 041/1GA PC$5.25/MF$2.25
Naval Ship Research and Development Center Bethesda Md

Determining the Concentration of Oil in Water Samples by Infrared Spectrophotometry: Phase II. Interlaboratory Study: Volume I.
Evaluation rept.,
Stanley Finger, Harry Feingold, Ed Timko, and Sidney Orbach. Jan 75, 124p Rept no. NSRDC-4536-Vol-1
See also Phase 1 rept. dated Dec 74, AD-A011 040, and Volume 2 dated Jan 75, AD-A011 042.

Descriptors: *Oils, Salinity, Performance(Engineering), Chemical analysis, Water, Accuracy, Errors, Infrared spectroscopy, Concentration(Composition), Experimental data, Solvent extraction, Precision, Sea water.
Identifiers: *Interlaboratory tests, *Oil pollution detection, *Water analysis, Spectroscopic analysis, Performance evaluation.

The main objective of this interlaboratory study is to validate and develop confidence in the quantitative analysis of oil-in-water concentration based on solvent extraction and infrared spectrophotometry. It is desired to evaluate this analytical procedure as a function of oil type, water salinity, oil concentration. A further objective of this study is to determine the range of variations of the measurement errors associated with this method both within each individual laboratory as well as across the participating laboratories. This volume highlights results and conclusions. Data is included.

AD-A011 066/8GA PC$3.25/MF$2.25
Texas Univ At Austin Dept of Chemistry
Possible Intervention of Triplet States in Thermal Reactions of Hydrocarbons. A Study of the Rearrangements of Cyclobutadiene Dimers and Analogous Compounds,
Roger S. Case, Michael J. S. Dewar, Steven Kirschner, R. Pettit, and William Slegeir. 20 Jun 74, 4p AFOSR-TR-75-0746
Contract F44620-71-C-0119
Availability: Pub. in Jnl. of the American Chemical Society, v96 p7581-7582 1974.

Descriptors: *Cyclobutenes, *Dimers, Hydrocarbons, Thermochemistry, Energy levels, Reaction kinetics, Reprints.

MINDO/3 calculations exclude the possibility that the syn dimer of cyclobutadiene rearranges to cyclooctatetraene by retro (2+2) cycloaddition. Rearrangement via bicyclo(4,2,0)octa-2,4,7-triene seems unlikely since the calculated activation energies for the the syn and anti dimers are too high and in the reverse order to experiment; the calculated activation energy for rearrangement of the triene to Cyclooctatetraene agrees well with experiment. The calculated activation energies for the rearrangement of the cyclobutadiene dimers by singlet-triplet crossing to give triplet cyclooctatetraene agree well with experiment, this unexpected prediction is supported by the apparent formation of triplet excited products in the rearrangement of benzo(b) tricyclo(4,2,0,0)oct-2-ene to benzo(c)cyclooctatriene as indicated by chemiluminescence when the reaction was carried out in the presence of 9,10-dibromoanthracene. (Author)

AD-A011 099/9GA PC$3.25/MF$2.25
American Univ Washington D C Dept of Chemistry
Complex Ions and Corrosion.
Technical rept.,
R. T. Foley. Jun 75, 11p Rept no. TR-1
Contract N00014-68-A-0245-0009

Descriptors: *Corrosion, *Passivity, *Surface chemistry, Electrolytes, Ionization, Stress corrosion, Metals, Anions, Dissolving, Cations, Atoms, Electrochemistry, Chlorides, Adsorption.

Environmental effects have been largely ignored in the development of corrosion mechanisms and concepts related to the passivity of metals and alloys. In the development of passivity mechanisms, including the formation of passive films, the composition of the electrolyte has been given virtually no consideration except in so far as it provides protons and hydroxyl ions. Yet the breakdown of passivity is often tied to specific ion adsorption and the chloride ion is attributed with unique properties that are evident for this ion in no other area of chemistry. The purpose of this communication is to reexamine the role of environmental effects, specifically anion effects, with the view of establishing a concept that will be a useful and guiding principle describing the influence of anions in corrosion and passivity.

AD-A011 102/1GA PC$3.75/MF$2.25
Colorado State Univ Fort Collins Dept of Mechanical Engineering
Layered Double-Diffusive Convection of Heat and Salt.
Technical rept.,
Thomas R. Mancini, Richard I. Loehrke, and Robert D. Haberstroh. Feb 75, 50p Rept no. TR-3
Contract N00014-67-A-0299-0009

Descriptors: *Convection, *Transport properties, *Saline solution, *Layers, Convection(Heat transfer), Heat transfer, Diffusion, Salinity, Water, Concentration(Composition), Temperature, Density, Thermoclines.

Heat and salt transport through a system consisting of a layer of cool fresh water resting on top of a layer of warm salt water were studied in two, quasi-steady experiments. Although the overall density difference due to salinity was always greater than that due to temperature, two convecting regions persisted separated by a thermocline, a region of large temperature and concentration gradients. Molecular diffusion was found to be the dominant transport mechanism in the central portion of the thermocline. As the overall stability number ((density difference due to salinity)/(density difference due to temperature)) increased the thermocline became thicker and the ratio of salt to heat flux decreased. These two characteristics of the thermohaline system are shown to be consistent with a conduction-convection model which views the thermocline as a conduction region separating two convective boundary layers.

AERE-R-7944 PC$4.00/MF$2.25
UKAEA Research Group, Harwell. Atomic Energy Research Establishment.
X-Ray Photoelectron Auger Spectroscopic Analyses of Steel Surfaces.
J. P. Coad. Jan 75, 12p
U.S. Sales Only.

Descriptors: (*Steels, *Chemical analysis), Auger electron spectroscopy, Films, Fractures, Grain boundaries, Oxides, Photoelectron spectroscopy, Surfaces, Uses, X radiation.

For abstract, see NSA 31 12, number 32506.

BARC-749 PC$4.25/MF$2.25
Bhabha Atomic Research Centre, Bombay (India). Spectroscopy Div.
Spectrographic Determination of Trace Metals in Atmospheric Particulates.
G. Krishnamurty, K. M. Saraswathy, and O. Thomas. 1974, 24p
U.S. Sales Only.

Descriptors: (*Atmospheric precipitations, *Emission spectroscopy), (*Manganese, Emission spectroscopy), (*Lead, Emission spectroscopy), (*Chromium, Emission spectroscopy), Air samplers, Arsenic, Cadmium, Emission spectra, Germanium, Iron, Metals, Nickel, Trace amounts, Vanadium, Zinc, *Particles.

For abstract, see NSA 31 12, number 35669.

CEA-CONF-2692 PC$4.00/MF$2.25
CEA Centre d'Etudes Nucleaires de Saclay, 91 - Gif-sur-Yvette (France).
Recent Developments in Plutonium Analysis.
F. Regnaud. Nov 73, 14p CONF-740486-1
In French. U.S. Sales Only.

Descriptors: (*Plutonium, *Absorption spectroscopy), (*Uranium, *X-ray fluorescence analysis), (*Plutonium oxides, *Chemical analysis), (*Uranium oxides, Chemical analysis), Accuracy, Quantitative chemical analysis, Spent fuel elements, Titration, Trace amounts.

For abstract, see NSA 31 12, number 32484.

CEA-CONF-2748 PC$4.00/MF$2.25
CEA Centre d'Etudes Nucleaires de Grenoble, 38 (France).
Studies of Sublimation Using a Differential Scanning Calorimetry Method.
M. Couach, E. Bonjour, and D. Simatos. Jul 74, 13p CONF-740745-1
U.S. Sales Only.

Descriptors: (*Ice, *Sublimation), (*Sublimation heat, *Measuring methods), Calorimeters, Capillaries, Mass transfer, Sublimation cooling.

For abstract, see NSA 31 12, number 35713.

CEA-CONF-2907 PC$4.75/MF$2.25
CEA Centre d'Etudes Nucleaires de Fontenay-aux-Roses, 92 (France). Dept. de Genie Radioactif.
Present Study and Development of Extraction Pulsed Columns.
H. Rouyer, J. Lebouhellec, E. Henry, and P. Michel. 31p CONF-740917-11
U.S. Sales Only.

Descriptors: (*Extraction columns, *Hydraulics), Economics, Efficiency, Mathematical models, Solvent extraction.

For abstract, see NSA 31 12, number 32526.

COM-75-10686/4GA PC$3.25/MF$2.25
National Bureau of Standards, Washington, D.C.
Evaluation of X-Ray Fluorescence Analysis for the Determination of Mercury in Coal.
Final rept.,
Robert L. Myklebust, Martha M. Darr, and Kurt F. J. Heinrich. Dec 74, 21p NBSIR-75-675

Descriptors: *Coal, *Mercury(Metal), *X ray spectrometers, Trace elements, Spectroscopic analysis, X ray analysis, X ray fluorescence.
Identifiers: *X ray fluorescence analysis.

Limits of detection for mercury in coal have been determined on both a wavelength-dispersive and an energy-dispersive x-ray spectrometer. They are between 2 and 3 ppm under best conditions for both spectrometers. Techniques for reducing the background intensity measured by the energy-dispersive system are discussed along with methods of preparing coal specimens for analysis in both instruments.

COM-75-10687/2GA PC$4.75/MF$2.25
National Bureau of Standards, Washington, D.C. Chemical Kinetics Information Center.
Supplementary Bibliography of Kinetic Data on Gas Phase Reactions of Nitrogen, Oxygen, and Nitrogen Oxides (1972-1973).
Final rept.,
Francis Westley. Jun 75, 91p* NBS-SP-371-1
Library of Congress Catalog no. 726-00272. Sponsored in part by Naval Ordnance Systems Command, Washington, D.C. See also COM-71-00841.

Paper copy also available from GPO as C13.10:371-1.

Descriptors: *Nitrogen, *Nitrogen oxides, *Oxygen, *Ozone, *Bibliographies, Reaction kinetics, Energy transfer, Gases, Vapor phases, Chemical reactions, Excitation.
Identifiers: *Reaction rates.

A reaction-oriented list of references is provided for papers and reports published in 1972 and 1973, containing rate data for reactions of N, N2, N2O, N2O2, N2O3, N2O4, N2O5, NO, NO2, NO3, NO4, O, O2 and O3 with each other. Some reactions of species in excited states are included. This bibliography, covering about 500 papers, extends the coverage of two previous bibliographies on the same subject, COM-71-00941, NBS-OSRDB-71-2, August 1971 and NBS Special Publication 371, February 1973. Some work published prior to 1972 omitted in the previous publications has been included here.

COM-75-50214-02/GA PC-GPO/MF$2.25-NTIS
National Bureau of Standards, Washington, D.C.
Journal of Research of the National Bureau of Standards: A, Physics and Chemistry. Volume 79A, Number 2, March-April 1975.
1975, 72p JNBAAR-79A(2), NBS-JRA-79A-02
Library of Congress Catalog Card No. 62-37059.
Paper copy available from GPO as C13.22/secA:79/2.

Descriptors: *Thermochemistry, *Chemistry, *Periodicals, Argon, Thermal conductivity, X ray scattering, Differential cross sections, Heat of combustion, Heat of formation, Helium, Nitrogen, Specific heat, Polyethylene, Electrical resistivity, Hafnium alloys, Shear modulus, Particulate composites, Emittance.
Identifiers: Scientific research, Nicotinic acid, Creatinine.

Contents:
- Thermal conductivity of gases. III. Some values of the thermal conductivities of argon, helium, and nitrogen;
- On the differential cross section for x-ray inelastic scattering;
- Simplification of van der Poel's formula for the shear modulus of a particulate composite;
- The enthalpies of combustion and formation of nicotinic acid and creatinine;
- Simultaneous measurements of specific heat, electrical resistivity, and hemispherical total emittance by a pulse heating technique:
- hafnium-3 (wt %) zirconium, 1500 to 2400 K;
- Heat capacities of polyethylene III. One linear and one branched sample from 5 to 350 K;
- Publications of the National Bureau of Standards.

COM-75-50315/1GA Not available NTIS
National Bureau of Standards, Washington, D.C.
Infrared Laser Enhanced Reactions: Temperature Resolution of the Chemical Dynamics of the O3(*) + NO Reaction System.
Final rept.,
M. J. Kurylo, W. Braun, Chieu Nguyen Xuan, and Andrew Kaldor. 15 Mar 75, 7p
Sponsored in part by Department of Transportation, Washington, D.C. Climatic Impact Assessment Program.
Pub. in Jnl. of Chemical Physics, v62 n6 p2065-2071, 15 Mar 75.

Descriptors: *Ozone, *Nitrogen oxide(NO), *Molecular relaxation, Chemiluminescence, Temperature, Energy transfer, Excitation, Molecular vibration, Reaction kinetics.
Identifiers: Reprints, *Laser enhanced reactions.

The rate constant for the decay of vibrationally excited ozone, O3(*) + NO reaction system has been measured from 153 to 373 K. Vibrationally excited O3 was produced in the asymmetric stretch normal mode by absorption of square wave modulated emission from a CO2 laser tuned to the P(30) 9.6 micrometer transition. Under appropriate experimental conditions a rapid V-V coupling process involving all three modes of O3 is believed to set up a Boltzmann population distribution among them. From the effects of temperature and buffer gas pressures an assessment can be made as to the predominant loss mechanism for the various modes. A comparison of the Arrhenius parameters for the reaction channels of O3(+) with parameters for the corresponding processes involving thermal O3 yields specific information about the effect of vibrational energy on the reaction dynamics.

COM-75-50317/7GA Not available NTIS
National Bureau of Standards, Washington, D.C.
Electron Spectroscopy of Chemisorbed Atoms and Surface Molecules.
Final rept.,
J. W. Gadzuk. 1974, 8p
Pub. in Proceedings of International Conference on Solid Surfaces (2nd), Kyoto, 25-29 Mar 74, Japanese Jnl. of Applied Physics, suppl2 pt2 p851-858 1974.

Descriptors: *Adsorption, *Chemisorption, *Atomic spectra, Atomic energy levels, Atoms.
Identifiers: *Electron spectroscopy, Reprints.

Chemical bonds formed between substrate and adsorbed atoms are characterized by new electronic energy levels which are derived from the atomic orbitals of each constituent. These energy levels are being observed experimentally through the techniques of field emission energy distributions, uv photoemission spectroscopy, and ion neutralization spectroscopy. These spectroscopies will be considered in the light of present day theoretical understanding of both the measurement and the chemisorption process.

COM-75-50320/1GA Not available NTIS
National Bureau of Standards, Washington, D.C.
Relaxation Energies in Chemisorption Spectroscopy.
Final rept.,
J. W. Gadzuk. Feb 75, 4p
Pub. in Jnl. of Vacuum Science and Technology, v12 n1 p289-292 Jan/Feb 75.

Descriptors: *Chemisorption, *Atomic energy levels, Relaxation.
Identifiers: Reprints.

The upward shift in atomic energy levels (or decrease in electron binding energies) which occurs upon sorption of an atom on a metal surface due to polarization of the valence band electrons, is considered. The polarization shift or extra-atomic relaxation energy is treated within the framework established by Hedin, Johansson, and Lundqvist and the results are related to image potential shifts which have been previously discussed in chemisorption theories.

COM-75-50327/6GA Not available NTIS
National Bureau of Standards, Washington, D.C.
Electron Scattering from NO and N2O below 10 eV.
Final rept.,
A. Zecca, I. Lazzizzera, M. Krauss, and C. E. Kuyatt. 1 Dec 74, 7p
Pub. in Jnl. of Chemical Physics, v61 n11 p4560-4566, 1 Dec 74.

Descriptors: *Electron scattering, *Nitrogen oxide(NO), *Nitrogen oxide(N2O), *Scattering cross sections, Resonance, Electronic states.
Identifiers: Reprints.

Total electron scattering cross sections for NO and N2O in the energy range 0-10 eV were obtained from exponential attenuation in a straight-line collision chamber without a confirming magnetic field. Good agreement is obtained with previous measurements where available. For NO, cross sections have been obtained for the first time for resonance structure in the energy range 0-2.5 eV. There appear to be small, sharp resonances between the large resonances. For both NO and N2O the cross section is observed to increase rapidly at very low energies. Structure in the cross sections is interpreted in terms of electronic states of NO(-) and N2O(-).

COM-75-50328/4GA Not available NTIS
National Bureau of Standards, Washington, D.C.
Experimental Observations of Electronic Energy Levels at a Solid-Vacuum Interface.
Final rept.,
E. W. Plummer, B. J. Waclawski, and T. Vorburger. 1974, 15p
Pub. in Proceedings of Symposium on Electrocatalysis, San Francisco, Calif., 13-15 May 74, Paper in Electrocatalysis, p43-57 1974.

Descriptors: *Surface chemistry, *Surface properties, Photoelectric emission, Field emission, Electronic states, Chemisorption, Adsorption, Dissociation, Catalysis.
Identifiers: Reprints.

A knowledge of the distribution of electrons both in energy and space at a surface is essential to the understanding of surface properties. Several techniques have been developed recently which have the potential capability of measuring the energy level spectrum of a surface. Two of these techniques, field emission and photoemission, will be discussed including a description of what can be measured, how it can be interpreted and the degree of consistency of the data. Experimental data will be presented to illustrate: (1) the surface density of states on clean single crystals and its relationship to bulk density of states; (2) the nature of the chemisorption bond and density dependent transitions; (3) dissociative or non-dissociative adsorption and (4) catalytic reactions involving adsorption of hydrocarbons.

COM-75-50333/4GA Not available NTIS
National Bureau of Standards, Washington, D.C.
High-Resolution Infrared Measurements of Nu1 and Force-Field Calculations for Thioborine (HBS).
Final rept.,
Robert L. Sams, and Arthur G. Maki. 1975, 9p
Pub. in Jnl. of Molecular Structure, v26 p107-115 1975.

Descriptors: *Infrared spectra, Absorption spectra, Spectrum analysis, Transitions, High resolution, Molecular rotation, Boron inorganic compounds, Sulfur inorganic compounds.
Identifiers: Reprints, *Thioborane.

The gas-phase high-resolution spectrum is reported for nu1 of the linear molecule thioborine (HBS) from 2775/cm to 2720/cm. Band centers and rotational constants are given for the 10(0)0-00(0)0 transitions of H(11B)(32S), H(10B)(32S), and H(10B)(34S) and for the 11(1)0-01(1)0 transitions of H(11B)(32S) and H(10B)(32S). A valence force field is determined from measured values of nu1, the centrifugal distortion, and the l-doubling constant. The remaining unobserved vibrational fundamentals are calculated from the force constants.

COM-75-50340/9GA Not available NTIS
National Bureau of Standards, Washington, D.C.
The Sulfur K beta Emission and K-Absorption Spectra from Gaseous H2S. III.
Final rept.,
Robert E. LaVilla. 15 Mar 75, 4p
Pub. in Jnl. of Chemical Physics, v62 n6 p2209-2212 15 Mar 75.

Descriptors: *Hydrogen sulfide, *Emission spectra, *Absorption spectra, *X ray spectra, Electron transitions, Molecular orbitals, Spectrum analysis.
Identifiers: Reprints.

The sulfur K-beta emission in fluorescence and K-absorption from gaseous H2S were measured on a double crystal spectrometer. The sulfur K-beta spectrum consists of four peaks. The three strongest peaks are shown to be single vacancy transitions of electrons from the three outer MO's to fill the single K shell vacancy. The weak fourth peak on the high energy side of the line structure is identified as a double vacancy transition. The sulfur K-absorption spectrum consists of three peaks of decreasing intensity with increasing photon energy. The unusual breadth (FWHM of 1.50 eV) and asymmetry on the high energy side of the first peak is ascribed to the Frank-Condon factors of the transitions. The other two peaks, which are narrow, are identified as transitions to Rydberg levels. In addition, the binding energy of the sulfur K shell electron was estimated to be 2478.3 eV. The sulfur L(2.3) absorption of H2S is also discussed briefly.

COM-75-50343/3GA Not available NTIS
National Bureau of Standards, Washington, D.C.
Photoabsorption from the 4d and 5p Shells of Barium.
Final rept.,
D. L. Ederer, T. B. Lucatorto, and E. B. Saloman. 1974, 2p
Pub. in Proceedings of the International Conference on VUV Radiation Physics, Hamburg, (4th), 17-26 Jul 74, ch3.5 p245-246 1974.

Descriptors: *Barium, *Absorption spectroscopy, *Ultraviolet spectra, Electron transitions, Heat pipes.
Identifiers: Reprints.

A plastic windowed heat pipe was used in conjunction with the NBS - 170 MeV synchrotron and a 3-m grazing incidence spectrograph to observe transition (4d)10 (5s)2 (5p)6 (6s)2 to (4d)9 (4s)2 (5p)6 (6s)2 (nf), (np) in the spectral region 110A - 150A. By replacing the plastic windows with tin, excitations involving transitions (5p)6 (6s)2 to (5p)5 (6s)2 (nd), (ns) were observed in the spectral region 520A - 650A.

COM-75-50344/1GA Not available NTIS
National Bureau of Standards, Washington, D.C.
Matrix Isolation Study of the Vibrational Spectrum and Structure of HC2.
Final rept.,
Marilyn E. Jacox. 1975, 9p
Sponsored in part by National Aeronautics and Space Administration, Greenbelt, Md. Goddard Space Flight Center.
Pub. in Chemical Physics, v7 p424-432 1975.

Descriptors: *Free radicals, *Infrared spectra, Chemical bonds, Molecular vibration, Spectrum analysis, Astronomical spectroscopy.
Identifiers: Reprints, Matrix isolation techniques, *Ethynyl radical.

Detailed isotopic studies of the infrared absorptions characteristic of the products of the decomposition of C2H2 in a mild discharge through argon trapped at 14 K indicate that HC2 is an important product and that an absorption at 3612/cm can be assigned to the carbon-hydrogen stretching fundamental of this species. The data suffice for determination of the stretching and stretching-interaction force constants of HC2, which, in turn, have permitted estimates of the bond lengths. The carbon-hydrogen bond is found to be exceptionally strong, and the carbon-carbon bond is intermediate between that characteristic of ground-state C2 and that of C2H2. The estimated rotational spacing is in excellent agreement with that found for HC2 in recent observations of the intersellar medium.

COM-75-50345/8GA Not available NTIS
National Bureau of Standards, Washington, D.C.
Electron Impact Excitation of Hg(+).
Final rept.,
D. H. Crandall, R. A. Phaneuf, and Gordon H. Dunn. Apr 75, 10p
Sponsored in part by National Aeronautics and Space Administration, Cleveland, Ohio. Lewis Research Center.
Pub. in Physical Review, A, v11 n4 p1223-1232 Apr 75.

Descriptors: *Mercury(Metal), *Excitation, Atomic energy levels, Electron beams, Particle collisions, Ion beams, Electron transitions, Emission spectra.
Identifiers: Excitation cross sections, Electron ion interactions, Reprints.

Crossed beams of electrons and Hg(+) ions have been employed to measure absolute cross sections for 165.0 nm emission, corresponding to the transition 6p doublet P(3/2) to 6s doublet S(1/2). The emission cross section is nearly identical to the excitation cross section. The cross section exhibits considerable structure in the energy region from threshold to the onset of the first cascade at 11.9 eV; this structure if likely due to interference from autoionizing states of neutral Hg. The total uncertainty at a 'good confidence' level is about 18%, taken as the quadrature sum of random uncertainty (5% at 90% C.L.) with systematic uncertainties (17% at a level equivalent to 90% C.L.). The results are also in reasonable agreement with a semiclassical Gryzinski-type calculation for energies above several times threshold.

COO-1248-46 PC$4.00/MF$2.25
Minnesota Univ., Minneapolis Dept. of Mechanical Engineering.
Electrical Charging of Small Particles at Low Pressures. Progress Report, July 1, 1974--June 30, 1975.
B. Y. H. Liu, and K. T. Whitby. Mar 75, 10p
Contract AT(11-1)-1248

Descriptors: (*Aerosols, *Electric charges), (*Particles, Electric charges), Charged particles, Particle size.

For abstract, see NSA 31 12, number 35716.

IS-T-656 PC$7.25/MF$2.25
Ames Lab., Iowa.
Heat Content of Liquid Cerium by Levitation Calorimetry.
L. K. Kuntz. Feb 75, 82p
Contract W-7405-eng-82

Descriptors: (*Cerium, *Enthalpy), Calorimetry, Specific heat, Thermodynamic properties, Very high temperature.

For abstract, see NSA 31 12, number 33873.

LA-5867-MS PC$4.00/MF$2.25
Los Alamos Scientific Lab., N.Mex.
In Vivo Tissue Analysis Using mu-Mesic X Rays.
R. L. Hutson. Jan 75, 9p
Contract W-7405-eng-36

Descriptors: (*Muonic atoms, *X-ray spectra), (*Tissues, *Radiometric analysis), (*Carbon, Radiometric analysis), (*Nitrogen, Radiometric analysis), In vivo, Oxygen.

For abstract, see NSA 31 12, number 32509.

LBL-2852 PC$8.50/MF$2.25
California Univ., Berkeley Donner Lab.
Single Atom Imaging in High Resolution Electron Microscopy.
W. Chiu. Jan 75, 106p
Contract W-7405-eng-48

Descriptors: (*Electron microscopy, *Sample preparation), (*Gold, *Activation analysis), Accuracy, Neutron reactions.

For abstract, see NSA 31 12, number 32464.

LBL-3500 PC$18.50/MF$2.25
California Univ., Berkeley Lawrence Berkeley Lab.
Interferometry of Electrochemical Mass Transfer Boundary Layers.
F. R. McLarnon. Dec 74, 310p
Contract W-7405-ENG-48

Descriptors: (*Copper, *Electrodeposition), (*Boundary layers, *Mass transfer), Copper sulfates, Ducts, Electrochemistry, Interferometry, Rectangular configuration.

For abstract, see NSA 31 12, number 35675.

NTIS/PS-75/527/2GA
PC$25.00/MF$25.00
National Technical Information Service, Springfield, Va.
Chemical Analysis of Aerosols and Airborne Particulates (A Bibliography with Abstracts).
Rept. for 1964-Jun 75,
Kirk G. Werner. Jun 75, 107p*
Supersedes COM-74-11018.

Descriptors: *Aerosols, *Bibliographies, *Chemical analysis, Dust, Chemical composition, Abstracts, Neutron activation analysis, Spectroscopic analysis, Particles, Activation analysis, Mass spectroscopy, Chromatographic analysis.
Identifiers: *Particulates, X ray fluorescence analysis.

Research is presented on the chemical analysis and composition of aerosols and airborne particulate matter. Techniques discussed range from chromatography to various methods of activation and spectroscopic analysis. Particle sampling techniques and particle size analysis are not covered. (Contains 102 abstracts).

N75-21384/3GA PC$3.25/MF$2.25
National Aeronautics and Space Administration. Lewis Research Center, Cleveland, Ohio.
Magnetization and Magnetic Susceptibility of DYH3.
D. J. Flood. 1974, 11p NASA-TM-X-71698, E-8303
Conf-Presented at AM. Phys. Soc. Meeting, Denver, 31 Mar. - 3 Apr. 1975.

Descriptors: *Dysprosium compounds, *Hydrogen, *Magnetic properties, *Powder (Particles), Magnetic permeability, Magnetization, Rare earth compounds, Temperature effects.

For abstract, see STAR 1313

N75-21385/0GA PC$3.25/MF$2.25
Kanner (Leo) Associates, Redwood City, Calif.
Self-Broadening of Principal Series Lines of Rubidium at High Number Densities.
H. J. Kusch. Apr 75, 17p NASA-TT-F-16301
Contract NASW-2481

Tran-Transl. Into English from Z. Phys. (West Germany), V. 25, 1972 p 257-268.

Descriptors: *Density (Number/volume), *Line spectra, *Rubidium, Absorption spectroscopy, High resolution, Quantum mechanics, Spectrum analysis.

For abstract, see STAR 1313

N75-21387/6GA PC$3.25/MF$2.25
Kanner (Leo) Associates, Redwood City, Calif.
Potential Distribution in Liquid Flow-Through Porous Carbon Electrodes.
H. Chino, M. Yamashita, and M. Kubokawa. Mar 75, 14p NASA-TT-F-16205
Contract NASW-2481
Tran-Transl. Into English from Denki Kagaku Oyohi Kogyo Butsuri Kagaku (Japan), V. 42, No. 5, 1974 p 231-236.

Descriptors: *Carbon, *Current distribution, *Electrodes, *Liquid flow, *Microporosity, Current density, Electrolytic polarization, Flow velocity, Hydrogen peroxide, Liquid oxygen.

For abstract, see STAR 1313

N75-21606/9GA PC$5.75/MF$2.25
Centre National de la Recherche Scientifique, Toulouse (France). Lab. d'Automatique et d'Analyse des Systemes.
Connection of a Quadrupole Mass Spectrometer to a Real Time Digital Computer: Application to Chemical Processes Couplage d'UN Spectrometre de Mass Quadripolaire a UN Calculateur Numerique en Temps Reel: Application a l'Etude des Processus Chimiques.
Ph.D. Thesis - Toulouse Univ.
D. Pinglot. 1974, 150p LAAS-PUBL-1128
Contract DGRST-70-02-150
Language in French.

Descriptors: *Acetates, *Mass spectroscopy, *Quadrupoles, *Vinyl polymers, Computer programs, Data acquisition, Data processing, Digital computers, Dynamic models, Performance tests, Real time operation, Spectrum analysis, Transfer functions.

For abstract, see STAR 1313

PB-241 285/6GA PC$3.25/MF$2.25
Naval Research Lab., Washington, D.C.
Quantitative Analysis of Airborne Asbestos by X-Ray Diffraction: Final Report on Feasibility Study,
L. S. Birks, M. Fatemi, J. V. Gilfrich, and E. T. Johnson. Jan 75, 20p NRL-7874 EPA/650/2-75-004
Previously announced as AD-A007 530.

Descriptors: *Asbestos, *X ray diffraction, *Aerosols, *Serpentine, Clay minerals, Quantitative analysis, X ray analysis, Fibers, Alignment, Experimental design.
Identifiers: *Air pollution detection.

Special x-ray diffraction geometry has been developed to distinguish chrysotile asbestos from serpentine and other clay minerals. The x-ray method requires alignment of the chrysotile fibers, and the technique for accomplishing this alignment has been developed and tested. A limit of detection of 0.2 micrograms asbestos has been achieved routinely for chrysotile in the absence of extraneous material from real air samples.

PB-241 837/4GA PC$8.75/MF$2.25
Abcor, Inc., Cambridge, Mass. Walden Research Div.
Procedures for Measurement in Stratified Gases. Volume I.
Final rept. Jun 73-May 74,
A. Zakak, R. Siegel, J. McCoy, S. Arab-Ismali, and J. Porter. Sep 74, 277p EPA/650/2-74-086-a
Contract EPA-68-02-1306
Paper copy also available in set of 2 reports, as PB-241 836-SET, PC$15.00.

Descriptors: *Gas sampling, *Stratification, *Gas flow, Velocity, Wind tunnels, Mathematical models, Mixing, Flue gases, Concentration(Composition), Profiles, Air pollution.
Identifiers: Stratified flow, Air pollutants.

The report gives results of a program to develop methods for the continuous extraction of representative gas samples from gas streams that exhibit compositional stratification, such as in a stack or chimney. The program considered available data in the literature, as well as field data generated during the program. Wind tunnel tests and mathematical modeling were used to develop sampling methodologies which are recommended. Results from the literature and field surveys indicate that gas stratification exists, but it is likely to be less general and less severe than particulate stratification. For a given gas stream, it is necessary to make a preliminary gas concentration survey to determine the existence of spatial stratification. The authors recommend methods for obtaining representative gas samples. They also examined the use of devices to mix stratified gas streams.

PB-241 838/2GA PC$7.25/MF$2.25
Abcor, Inc., Cambridge, Mass. Walden Research Div.
Procedures for Measurement in Stratified Gases. Volume II. Appendices.
Final rept. Jun 73-May 74,
A. Zakak, R. Siegel, J. McCoy, S. Arab-Ismali, and J. Porter. Sep 74, 214p EPA/650/2-74-086-b
Contract EPA-68-02-1306
Paper copy also available in set of 2 reports as PB-241 836-SET, PC$15.00.

Descriptors: *Gas sampling, *Samplers, *Gas flow, *Stratification, Flue gases, Probes, Mixing, Computer programs, Velocity, Concentration(Composition), Profiles.
Identifiers: Tracers.

The report contains appendices to results of a program to develop methods for the continuous extraction of representative gas samples from gas streams that exhibit compositional stratification, such as a stack or chimney. The program considered available data in the literature, as well as field data generated during the program. Wind tunnel tests and mathematical modeling were used to develop sampling methodologies which are recommended. Appendices include: Automatic isokinetic sampling systems; Arrays and mechanical traversing systems; Diffusion tube sampling; Temperature stabilized diffusion tube; Tracer methods; Thermal null probes; Velocity and concentration profiles; The effect of jet impingement on mixing in a gas stream; Jet mixing in a duct; Combustion and material balance calculations; Computer program for analytical simulation of procedures for velocity and emission measurements in stratified stack gases (theory and user manual).

TRG-Report-1759(R/X) PC$4.75/MF$2.25
UKAEA Reactor Group, Risley.
Thermodynamic Properties of NA, al sub 2 O sub 3 , Mo, and Uo sub 2 Above 2000 exp 0 K.
D. L. Booth. Nov 74, 35p
U.S. Sales Only.

Descriptors: (*Sodium, *Thermodynamic properties), (*Aluminium oxides, Thermodynamic properties), (*Molybdenum, Thermodynamic properties), (*Uranium dioxide, Thermodynamic properties), Density, Liquid metals, Very high temperature, Critical pressure, Critical temperature, Equations of state, Enthalpy, Vapor pressure.

For abstract, see NSA 31 12, number 33890.

TT-73-52031 PC$6.25/MF$2.25
National Bureau of Standards, Washington, D.C.
Nuclear Magnetic Resonance, No. III,
P. M. Borodin. 1975, 165p
Trans. of mono. Yadernyi Magnitnyi Rezonans, Vol 3, Leningrad, 1969. Sponsored in part by National Science Foundation, Washington, D.C. Special Foreign Currency Science Information Program.

Descriptors: *Nuclear magnetic resonance, Molecules, Theory, Crystals, Electron paramagnetic resonance, USSR, Translations, Solutions, Spectrometers, Acoustic waves, Clathrate compounds.
Identifiers: Nuclear magnetic resonance(Fluorine 19).

The book contains a number of articles concerning nuclear magnetic resonance. Theory, experimental results, on structure and molecular dynamics of liquids and solids, apparatus, and EPR in a weak magnetic field are topics discussed.

WANL-TMI-1952 PC$4.00/MF$2.25
Westinghouse Electric Corp., Pittsburgh, Pa. Astronuclear Lab.
Chemical Aspects and Approaches to Mining the Oceans for Uranium.
J. Roesmer. Nov 68, 18p

Descriptors: (*Uranium, *Coprecipitation), Economics, Iron hydroxides, Seas, Trace amounts.

For abstract, see NSA 31 12, number 32529.

7E. Radio and Radiation Chemistry

AED-C-13-10(1974) PC$5.50/MF$2.25
Zentralstelle fuer Atomkernenergie-Dokumentation, Leopoldshafen (F.R. Germany).
Bibliographies in Nuclear Science and Technology. Section 13. Decontamination. Number 10.
H. Philipp, and E. Wichmann. Dec 74, 50p
In several languages. U.S. Sales Only.

Descriptors: (*Decontamination, *Bibliographies), Animals, Buildings, Gases, Laboratory equipment, Liquids, Man, Surfaces.

For abstract, see NSA 31 12, number 32625.

CEA-CONF-2813 PC$4.00/MF$2.25
CEA Centre d'Etudes Nucleaires de Grenoble, 38 (France); UKAEA Reactor Group, Springfields.
Influence of Pore Structure on the Inhibited Radiolytic Carbon Dioxide/Graphite Reaction.
P. Campion, R. Lind, R. J. Blanchard, and C. Koch. 8p CONF-740995-1
U.S. Sales Only.

Descriptors: (*Graphite, *Oxidation), (*Carbon monoxide, *Radiolysis), (*Carbon dioxide, *Corrosive effects), Binary mixtures, Coolants, Hydrogen, Methane, Moisture, Porosity.

For abstract, see NSA 31 12, number 34027.

CEA-CONF-2814 PC$4.00/MF$2.25
CEA Centre d'Etudes Nucleaires de Grenoble, 38 (France); UKAEA Reactor Group, Springfields.

Effect of Coolant Composition on the Radiolytic Carbon Dioxide/Graphite Reaction.
P. Campion, A. Blanchard, R. Lind, R. Blanchard, and C. Koch. 8p CONF-740995-2
U.S. Sales Only.

Descriptors: (*Graphite, *Oxidation), (*Carbon dioxide, *Chemical radiation effects), Chemical composition, Coolants, Corrosive effects, Mockup, Porosity, Radiolysis.

For abstract, see NSA 31 12, number 34028.

COM-75-50324/3GA Not available NTIS
National Bureau of Standards, Washington, D.C.
Photodissociation of Acetylene and Bromoacetylene in the Vacuum Ultraviolet: Production of Electronically Excited C2H and C2.
Final rept.,
H. Okabe. 1 Apr 75, 6p
Contract NASA-W-13424
Pub. in Jnl. of Chemical Physics, v62 n7 p2782-2787, 1 Apr 75.

Descriptors: *Acetylene, Spectrum analysis, Photochemical reactions, Free radicals, Far ultraviolet radiation, Excitation, Fluorescence.
Identifiers: *Photodissociation, Reprints, *Acetylene/bromo.

The photodissociation of C2H2 and BrC2H in the vacuum ultraviolet produces nearly identical quasicontinuous emissions in the region 4000 to above 5500A. It is concluded that the continua are most likely associated with the electronically excited C2H(C2H(*)) in both cases. Based on this conclusion spectroscopic and thermochemical data are derived from the thresholds of incident wavelength to produce the continua. The photolysis of BrC2H yields the C2 Swan bands in addition to the C2H(*) by the spin forbidden process. The fluorescence yield has been measured as a function of incident wavelength. Bond dissociation energies and the heats of formation of haloacetylenes are estimated in comparison with the corresponding cyanogen halides. Primary photochemical processes in C2H2 are discussed.

COM-75-50329/2GA Not available NTIS
National Bureau of Standards, Washington, D.C.
Surface Molecules and Chemisorption. II. Photoemission Angular Distributions.
Final rept.,
J. W. Gadzuk. 15 Dec 74, 15p
Pub. in Physical Review, vB10 n12 p5030-5044, 15 Dec 74.

Descriptors: *Photoelectric emission, *Chemisorption, Angular distribution, Chemical bonds, Surface chemistry.
Identifiers: Reprints, Photoionization.

A theory of the angular distributions of electrons photoemitted from submonolayer films of chemisorbed atoms is presented. Chemisorption is treated within the surface-molecule limit of the Anderson model. It is shown that the key features which differentiate between solid-state photoemission and atomic photoionization are the localization of the hole left behind in the photoexcitation process and the preferential orientation of atomic or molecular orbitals (in photoemission from solids or chemisorbed atoms). The differential photoionization cross sections or angular distributions for spatially oriented atoms and surface molecules are obtained and contours of constant emission intensity, as projected on a flat fluorescent screen which is parallel to the surface, are presented. It is shown that the chemisorption bonding geometry can be ascertained from such measurements.

COM-75-50337/5GA Not available NTIS
National Bureau of Standards, Washington, D.C.
The Photolysis of Neopentane and Isobutane with 7.6, 8.4, and 10.0 eV Photons.
Final rept.,
R. E. Rebbert, S. G. Lias, and P. Ausloos. 1975, 17p
Pub. in Jnl. of Photochemistry, v4 p121-137 1975.

Descriptors: *Photolysis, *Pentanes, *Butanes, Quantum efficiency, Elimination reactions, Free radicals, Far ultraviolet radiation.
Identifiers: Reprints.

The photolysis of neopentane has been studied using photons of energies 7.6, 8.4, and 10.0 eV, at pressures in the range 1 - 760 Torr and in the liquid phase. Quantum yields of all molecular and radical products smaller than C5 have been determined in the gas phase experiments, and have been estimated in the liquid phase. In contrast to results obtained with other alkanes studied to date, hydrogen elimination is found to be an unimportant process in the photolysis of neopentane. The two predominant primary processes are elimination of methane and direct C-C bond cleavage. Quantum yields of molecular and radical products formed in the 7.6 and 8.4 eV photolysis of isobutane are also reported and are discussed briefly, with particular emphasis of the effect of energy on the mechanisms of the molecular elimination processes.

CONF-750112-3 PC$4.75/MF$2.25
Argonne National Lab., Ill.
Spectroscopic Properties of Bk exp 3 + and CF exp 3 +.
W. T. Carnall, and S. Fried. 32p

Descriptors: (*Berkelium compounds, *Crystal structure), (*Californium compounds, Crystal structure), Energy levels, Spectroscopy.

For abstract, see NSA 31 12, number 32626.

COO-2410-1 PC$4.50/MF$2.25
Yale Univ., New Haven, Conn.
Laser Photolysis Studies on the Structure and Photoexcited States of Solvated Electrons. Final Report, November 1, 1973--December 31, 1974.
G. A. Kenney-Wallace. 1974, 27p
Contract AT(11-1)-2410

Descriptors: (*Solvated electrons, *Excited states), Ethanol, Lifetime, Photolysis, Propanols, Pulsed irradiation, Radiolysis, Research programs.

For abstract, see NSA 31 12, number 32577.

COO-2451-1 PC$4.25/MF$2.25
Utah Univ., Salt Lake City.
Synthesis and Biological Incorporation of Icons into Macromolecules for NMR Study. Progress Report, June 1, 1974--May 31, 1975.
D. M. Grant. 1975, 22p
Contract AT(11-1)-2451

Descriptors: (*Carbon 13, *Radiochemistry), (*Nitrogen 15, Radiochemistry), (*Glycine, *Labelling), (*Valine, Labelling), Labelled compounds, Peptides, Synthesis, Alanine-beta, Leucine, Uracils.

For abstract, see NSA 31 12, number 32627.

ORO-4179-37 PC$4.25/MF$2.25
Texas Agricultural and Mechanical Univ., College Station Dept. of Chemistry.
Radiolytic Investigations of Micellar and Macromolecular Systems. Annual Progress Report, April 1, 1974--March 31, 1975.
J. H. Fendler. 1975, 24p
Contract AT(40-1)-4179

Descriptors: (*Lipids, *Radiolysis), (*Carboxylic acids, Radiolysis), (*Thiols, Radiolysis), (*Quinones, Radiolysis), Lifetime, Research programs, Thymine.

For abstract, see NSA 31 12, number 32583.

PB-242 122/0GA PC$3.25/MF$2.25
Bureau of Mines, Morgantown, W. Va. Morgantown Energy Research Center.
Precision Tests of Neutron Sulfur Meter in Coal Preparation Plant.
Research rept.,
A. W. Hall, J. W. Martin, R. F. Stewart, and A. M. Poston. Apr 75, 18p BuMines-RI-8038

Descriptors: *Coal, *Sulfur, *Neutron activation analysis, Gamma spectrometers, Neutron irradiation, Gamma ray spectra.
Identifiers: Californium 252.

A meter based on measurement of prompt gamma rays from thermal neutron capture in coal was developed for monitoring the sulfur content of coal streams. Neutrons from an 80-microgram californium-252 source penetrate the coal, producing thermal neutrons that are captured by atoms of elements present in the coal. The excited atoms emit prompt gamma rays with energies characteristic of the capturing element. These gamma rays are detected with a 6- by 7-inch sodium iodide detector and processed by electronic equipment to produce a gamma ray energy spectrum of the elements. Tests of the meter at a commercial coal preparation plant showed that sulfur in moving coal can be determined to a precision of 0.05 percent sulfur within 2 minutes. Reliablility of the coal handling system proved inadequate for long term operation and improvements are planned.

RRL-3238-497 PC$4.25/MF$2.25
Carnegie-Mellon Univ., Pittsburgh, Pa.
Quarterly Report, July 1, 1974--September 30, 1974.
4 Oct 74, 21p
Contract AT(11-1)-3238

Descriptors: (*Radiation chemistry, *Research programs), Alcohols, Aqueous solutions, Electron spin resonance, Folic acid, Pulsed irradiation, Pyrimidines, Radicals, Solvated electrons, Vitamin k.

For abstract, see NSA 31 12, number 32584.

RRL-3238-508 PC$4.50/MF$2.25
Mellon Inst. of Science, Pittsburgh Radiation Research Labs.
Quarterly Report, October 1, 1974--December 31, 1974.
16 Jan 75, 27p
Contract AT(11-1)-3238

Descriptors: (*Radiation chemistry, *Research programs), Aqueous solutions, Chromium compounds, Cycloalkanes, Electron spin resonance, Gamma radiation, Hydrogen peroxide, Hydroxyl radicals, Nitrobenzene, Oxidation, Phenols, Potassium compounds, Pulsed irradiation, Radicals, Scavenging, Thiocyanates.

For abstract, see NSA 31 12, number 32585.

8. EARTH SCIENCES AND OCEANOGRAPHY

AD-A011 072/6GA PC$3.25/MF$2.25
Massachusetts Inst of Tech Cambridge
Scaling Law of Earthquake Source Time-Function,
Keiiti Aki. 3 Mar 72, 26p AFOSR-TR-75-0709
Contract F44620-71-C-0049, ARPA Order-1827

Errata sheet inserted.
Availability: Pub. in Geophysical Jnl. of the Royal Astronomical Society, v31 n1-3 p3-25 1972.

Descriptors: *Earthquakes, Scaling factors, Law, Intensity, Mathematical models, Density, Time, Faults(Geology), Reprints.
Identifiers: Scaling laws.

Further evidences support the scaling law of far-field seismic spectrum based upon the omega-square model (Aki) for earthquakes with M sub S > 6 and for periods T > 10 s. Recent observations, however, unequivocally require the modification of the above law for the periods T < 10 s. Unfortunately, the presently available data are not sufficient for a unique revision of the scaling law. We propose two alternatives and discuss their implications and consequences. In either case, we have to conclude that a large earthquake and a small one are substantially different. (Author)

8A. Biological Oceanography

AD-A011 070/0GA PC$3.25/MF$2.25
Massachusetts Inst of Tech Cambridge
On the Disturbance Due to a Spherical Distortional Pulse in an Elastic Medium,
Sarva Jit Singh, and Martin Rosenman. 11 Nov 72, 11p AFOSR-TR-75-0703
Contract F44620-71-C-0049, ARPA Order-1827
Availability: Pub. in Jnl. Pure and Applied Geophysics, v110 p1946-1954 1973.

Descriptors: *Seismographs, Oscillation, Seismology, Stresses, Elastic properties, Decay schemes, Distortion, Isotropism, Reprints.

Theoretical expressions are derived for the displacement, velocity and stress in the time domain induced by an axially symmetric shearing stress applied at the inner surface of a spherical cavity in a homogeneous, isotropic, elastic medium of infinite extent. Theoretical seismorgrams are computed for a step source and for three sources with exponential decay in time. A satisfactory time-dependence of the source can be obtained by combining the step source with one or more exponentially decaying sources. (Author)

8B. Cartography

AD-A010 644/3GA PC$3.75/MF$2.25
Army Engineer Topographic Labs Fort Belvoir Va
Preliminary Image Data Extraction Experiments with the Phase I, Automated Image Data Extraction System - 1.
Research note Oct 73-Apr 74,
L. P. Murphy, and E. G. Trelinskie, Jr. Dec 74, 35p Rept no. ETL-RN-74-7

Descriptors: *Data acquisition, *Image processing, *Man machine systems, Automation, Terrain intelligence, Terrain, Topography, Mapping, Photointerpretation.

The research note describes an experimental device, referred to as the Automated Image Data Extraction System, and the results of a limited number of terrain data extraction experiments using multiband input images.

AD-A010 900/9GA PC$3.25/MF$2.25
Louisiana State Univ Baton Rouge Coastal Studies Inst
Trajectories and Speeds of Wind-Driven Currents near the Coast.
Technical rept.,
Stephen P. Murray. 6 Jun 74, 17p Rept no. TR-190
Contract N00014-69-A-0211-0003
Availability: Pub. in Jnl. of Geophysical Oceanography, v5 n2 p347-360 Apr 75.

Descriptors: *Ocean currents, *Eddy currents, Coastal regions, Wind, Velocity, Trajectories, Stratification, Reprints.

Detailed observation of drogue movements within 800 m of a straight shoreline indicates the primary current generated by local winds to be directed within a few degrees of parallel to the shore nearly independently of wind direction. Subtle vertical structure in the onshore-offshore speed component is dependent on vertical stratification such that unstratified water produces a two-layered flow (onshore in the surface layer, offshore in the bottom layer), and moderately stratified water produces a three-layered flow (onshore in surface and bottom layers, offshore at intermediate depths). Theoretical conclusions from Jeffreys' constant eddy viscosity theory support the unstratified velocity profile and accurately predict the alongshore current speeds. Numerical solutions with a depth-dependent eddy viscosity indicate that the three-layered flow pattern is a direct result of the density gradient. Even in these shallow waters the inclusion of coriolos effects in the theory is necessary for a complete understanding of the current observations. Simple theoretical calculations on the response characterisitcs of various sized surface-tracked drogues as a function of wind speed indicate that drogue size should be carefully selected in terms of expected magnitudes of wind and current speeds. (Author)

E75-10280 PC$9.25/MF$2.25
Wisconsin Univ., Madison. Inst. for Environmental Studies.
Evaluation of the Application of ERTS-1 Data to the Regional Land Use Planning Process.
Final rept. Jun 72-Apr 74,
Bernard J. Niemann, Jr. 23 Apr 74, 315p NASA-CR-142708
Contract NAS5-21754
Original contains imagery. Original photography may be purchased from the EROS Data Center, 10th and Dakota Ave., Sioux Falls, S.D. 57198.

Descriptors: *Land use, Regional planning, Land management, Management planning, Wisconsin, Earth resources program, Data banks, Eutrophication, Lakes, Urban development.

The author has identified the following significant results. Employing simple and economical extraction methods, ERTS can provide valuable data to the planners at the state or regional level with a frequency never before possible. Interactive computer methods of working directly with ERTS digital information show much promise for providing land use information at a more specific level, since the data format production rate of ERTS justifies improved methods of analysis.

N75-21779/4GA PC$5.75/MF$2.25
National Aeronautics and Space Administration. Lyndon B. Johnson Space Center, Houston, Tex.
The ERTS-1 Investigation (Er-600). Volume 5: Erts-1 Urban Land Use Analysis.
Report, Jul. 1972 - Jun. 1973.
R. B. Erb. Oct 74, 121p NASA-TM-X-58121, JSC-08460
Misc-Original Contains Color Illustrations.

Descriptors: *Houston (Tx), *Land use, *Multispectral photography, *Urban development, Data processing, Earth resources program, Mapping, Photointerpretation.

For abstract, see STAR 1313

8C. Dynamic Oceanography

AD-A010 546/0GA PC$4.25/MF$2.25
Environmental Prediction Research Facility (Navy) Monterey Calif
Puerto Rico Operating Area Search and Rescue Program - USAR.
Technical note,
K. Rabe. Apr 75, 64p Rept no. ENVPREDRSCHF-tech note-19

Descriptors: *Search and rescue, *Target drones, *Ocean currents, *Computer applications, Wind, Computerized simulation, Computer programs, Position finding, Oil spills, Water pollution, Computations.
Identifiers: USAR computer program, CDC 3100 computers.

This document describes a small area search and rescue model which has been programmed for use in the detection and recovery of target drones and similar objects which have landed in the Puerto Rico operating area. The model uses currents produced by a hydrodynamical-numerical model and real time winds as the driving forces. The capability to compute pollutant drift from an instantaneous release point is included, as well as the computation of the resultant currents produced by different wind fields. The model is readily adaptable to different areas and its time step and leeway codes can be tuned to fit the needs of the user.

AD-A010 626/0GA PC$4.25/MF$2.25
Physical Dynamics Inc Mclean Va
Electromagnetic Fields Generated by Ocean Waves.
Final technical rept. 1 Mar 72-1 Aug 74,
Walter Podney. Aug 74, 66p RADC-TR-74-285
Contract F30602-72-C-0495, ARPA Order-1649

Descriptors: *Ocean waves, *Electromagnetic fields, Ocean surface, Electric current, Gradiometers, Thermoclines.

A primary purpose of this paper is to generalize and extend previous work in order to remove restrictive assumptions imposed on sea water velocity fields. The author presumes only that the divergence of velocity vanishes and so only exclude flow fields produced by sound waves. By using Faraday's and Ampere's laws to derive a vector potential function for the induced electromagnetic field, the author demonstrates that the electromagnetic field generated by a progressive ocean wave in a horizontally stratified ocean is a sum of a transverse electric type field, a transverse magnetic type field, and an electrostatic field. Velocity components in a vertical plane containing the direction of wave propagation generate the transverse electric part of the field, and the velocity component normal to the plane generates the transverse magnetic part of the field. The electrostatic part of the field results from surface charges that halt vertical electric currents at an ocean surface.

AD-A010 752/4GA PC$3.25/MF$2.25
Coastal Engineering Research Center Fort Belvoir Va
Behavior of Beach Fill at Atlantic City, New Jersey,
Craig H. Everts, Allan E. DeWall, and Martin T. Czerniak. 1974, 20p Rept no. CERC-Reprint-12-74
Availability: Pub. in Proceedings of the Coastal Engineering Conference (14th), Copenhagen (Denmark), Jun 74, ch80 p1370-1388.

Descriptors: *Beach erosion, *Fillers, *Sand, *Beaches, New Jersey, Coastal regions, Ocean tides, Ocean waves, Reprints.
Identifiers: Atlantic City.

A beach monitoring program between 1962 and 1972 at Atlantic City, New Jersey was designed to observe the response of beaches to waves and tides of specific intensity and duration as a first step in developing a storm warning system for low-lying coastal communities. As a by-product of that study the behavior of beach sand following two beach replenishment projects in 1963, and again in 1970, was determined. Monitoring was done using repetitive beach Surveys above mean sea level (msl) at seven profile lines. Survey results show that following replenishment, losses of the fill material above msl were between nine and twelve times the losses measured in adjacent non-fill areas. Loss rates were largest at the updrift end of the fill region. About two and one-half times more material appeared to move in a seasonal on-offshore direction than moved permanently alongshore and above msl to the southwest. For each meter of beach retreat, 5 to 6 cu M/lineal meter of sill were lost. (Author)

AD-A010 858/9GA PC$3.25/MF$2.25
Informatics Inc Rockville Md
Bibliography of Soviet Material on Internal Waves, Number 4, January-May 1975,
Stuart G. Hibben, L. H. Boylan, and M. Ness. 6 Jun 75, 22p
Contract N00600-75-C-0018, DARPA Order-2790
See also report dated 27 Jan 75, AD/A005 565.

Descriptors: *Ocean waves, *Internal waves, *Bibliographies, Turbulent flow, Heat transfer, Acoustics, Detectors, Boundary layer, Incompressible flow, Thermoclines, Ocean surface, Underwater sound, Gravity waves, USSR.

This is the fourth bibliography of Soviet open-source publications relating to internal wave studies. It covers material received from January through May 1975. Main selection criteria are studies of small-scale variation in ocean parameters and of airborne techniques for deducing internal wave conditions. An index of serial source abbreviations is appended.

AD-A010 912/4GA PC$3.75/MF$2.25
Royal Aircraft Establishment Farnborough (England)
Sea Wave Spectra Derived from Airborne Radio Altimeter Measurements.
Technical memo.,
A. C. Michin. Dec 74, 29p Rept no. RAE-TM-GW(NEW)1001 DRIC-BR-44879

Descriptors: *Ocean waves, *Power spectra, Measurement, Airborne, Radio equipment, Accuracy, Predictions, Feasibility studies, Computer programs, FORTRAN, Great Britain.
Identifiers: Remote sensing.

The results of a preliminary investigation into the accuracy of sea wave spectra derived from measurements of the sea wave encounter spectrum, are presented. The basic measurements require an aircraft equipped with a radio altimeter and tape recorder, with some available means of calculating the motions of the aircraft in a vertical plane. The predicted spectra are compared with those derived from wave measurements using a Datawell Waverider buoy. A FORTRAN program to carry out the processing of results is included.

AD-A011 094/0GA PC$5.25/MF$2.25
Woods Hole Oceanographic Institution Mass
A Compilation of Moored Current Meter and Wind Observations. Volume III. 1970 Array Experiment.
Technical rept.,
R. T. Pollard, and S. Tarbell. Feb 75, 102p Rept no. WHOI-75-7
Contract N00014-66-C-0241
See also Volume 7 dated Jul 74, AD/A-001 715.

Descriptors: *Ocean currents, *Sea breeze, *Mooring, *North Atlantic Ocean, Wind velocity, Buoys, Power spectra, Anemometers, Flowmeters, Statistical data, Diagrams, Seasonal variations, Recovery, Sampling.

Summaries of wind and current measurements made with current meters and wind recorders at site D in the North Atlantic Ocean by the Woods Hole Oceanographic Institution during June, July and August of 1970 are presented. Averaged quantities are presented in computer-generated output as basic statistics, spectra, demodulation plots, progressive vector diagrams, and east-north component plots.

8E. Geodesy

COM-75-10736/7GA PC$8.75/MF$2.25
Coast and Geodetic Survey, Washington, D.C.
Plane Coordinate Intersection Tables (2 1/2-Minute) - California.
Special pub.
1975, 287p SP-327 NOAA-75050804
Paper copy also available from GPO.

Descriptors: *California, *Coordinates, *Latitude, *Longitude, Maps, Mapping, Grids(Coordinates), Position(Location), Tables(Data).

The tables in this publication contain the plane coordinates for 2 1/2-minute intersections of meridians and parallels within the limits of the state of California. These plane coordinates, based on the state plane-coordinate system established by the U.S. Coast and Geodetic Survey, are arranged by 12 1/2-minute bands of latitude with the full range of longitude of the zone, followed by the coordinates for the next higher band of latitude. They are also arranged by zone. The purpose of these tables is for use in making maps. Meridians and parallels may be placed on maps constructed on a rectangular grid of the state system, or the grid lines of the system may be placed on maps constructed on a projection of meridians and parallels. Also, approximate values of plane coordinates of geographic positions may be obtained by interpolation within the tables.

E75-10282 PC$3.25/MF$2.25
Battelle Columbus Labs., Ohio.
Calibration and Evaluation of Skylab Altimetry for Geodetic Determination of the Geoid.
Progress rept. no. 22, 1-30 Apr 75,
A. George Mourad, S. Gepalapillai, and D. M. Furbara. 14 May 75, 4p NASA-CR-142719
Contract NAS9-13276

Descriptors: *Altimeters, Geoids, Geodetic surveys, EREP, Skylab program, Ocean bottom, Topography, Gravitation.

The author has identified the following significant results. The collocation technique to filter the remaining EREP passes no. 4, no. 6, and no. 9 was completed. The correlation studies of altimetry geoid profiles with the gravity data and ocean bottom topography were also completed.

N75-21920/4GA PC$7.50/MF$2.25
National Aeronautics and Space Administration. Goddard Space Flight Center, Greenbelt, Md.
Goddard Earth Models (5 and 6).
F. J. Lerch, C. A. Wagner, J. A. Richardson, and J. E. Brownd. Dec 74, 238p NASA-TM-X-70868, X-921-74-145
Subm-Submitted for Publication.

Descriptors: *Earth (Planet), *Gravitational fields, *Mathematical models, *Tracking stations, Data reduction, Earth surface, Geodetic surveys, Gravity anomalies, Satellite tracking, Tracking networks.

For abstract, see STAR 1313

8F. Geography

AD-A010 753/2GA PC$3.25/MF$2.25
Coastal Engineering Research Center Fort Belvoir Va
Beach Fill Stability and Borrow Material Texture,
William R. James. 1974, 18p Rept no. CERC-Reprint-13-74
Availability: Pub. in Proceedings of the Coastal Engineering Conference (14th), Copenhagen (Denmark), Jun 74, ch78 p1334-1349.

Descriptors: *Beaches, *Civil engineering, Filling, Erosion, Countermeasures, Sediments, Particle size, Texture, Mass transfer, Mathematical models, Reprints.

The dependence of beach fill stability on the textural properties of borrow material requires development of quantitative methods for use in selection of borrow areas and in prediction of possible maintenance costs associated with periodic renourishment. If a shore segment is viewed as a sediment mass transfer system, where grains of different size have different transport rates, then termination of natural sediment input to the shore segment will cause the beach to retreat and the materials in the active zone will become coarser. The ratio of retreat rates associated with a given borrow material texture to that associated with native material can be used in optimizing economic factors involved in selection among potential borrow zones. With certain simplifying assumptions the relative retreat rate associated with a given borrow material texture can be predicted from observations of the modifications in textural properties of native material which occur during the eroding condition following termination of the natural supply of sediment. Further simplifying assumptions result in an analytical expression for relative retreat rates which may not require observations of the natural beach in the eroding condition. The proposed method is in substantial agreement with qualitative guidelines provided in the Shore Protection Manual. (Author)

AD-A010 899/3GA PC$3.25/MF$2.25
Louisiana State Univ Baton Rouge Coastal Studies Inst
Computing Eolian Sand Transport from Routine Weather Data.
Technical rept.,
S. A. Hsu. 1974, 11p Rept no. TR-191
Contract N00014-69-A-0211-0003
Availability: Pub. in Proceedings of the Coastal Engineering Conference (14th), Copenhagen (Denmark), Jun 74, p1619-1626.

Descriptors: *Sand, *Beaches, Wind velocity, Transport properties, Shear stresses, Computations, Coastal regions, Deserts, Meteorological data, Weather, Reprints.
Identifiers: Eolian sand.

Extensive wind profile measurements have been made over beaches, tidal flats, and small dune fields in Barbados, Ecuador, Florida, Texas, and on Alaskan Arctic coasts by the author and his associates during the past several years. The linear relationship between shear and wind velocities was further verified by these measurements, in conjunction with Bagnold's data from experiments in a Libyan desert. From these measurements, a simple method is developed for computing eolian transport of the most common sand particle sizes which occur on coasts and deserts by using only routinely available wind observations from nearby weather stations. (Author)

COM-75-10681/5GA PC$4.75/MF$2.25
South Carolina Univ., Columbia. Coastal Research Div.

Beach Erosion Inventory of Charleston County, South Carolina: A Preliminary Report.
Technical rept.,
Michael F. Stephen, Paul J. Brown, Duncan M. FitzGerald, Dennis K. Hubbard, and Miles O. Hayes. Mar 75, 82p SC-SG-75-4 NOAA-75050203

Descriptors: *Beach erosion, *Sediments, *Geomorphology, Shores, Coastal topographic features, Graphs(Charts), South Carolina.
Identifiers: Sea Grant program, *Charleston County(South Carolina), Accretion.

Rates of shoreline change measured from vertical aerial photographs between the years 1939 and 1973 allow classification of the Charleston County, South Carolina, coastline into four categories: areas of long term erosion, which have undergone relatively continuous erosion over the study interval; Areas of long term accretion, which have undergone relatively continuous deposition over the study interval; unstable areas, with fluctuations in position of the shoreline greater than 50 feet over the study interval; and stable areas, with fluctuations in position of the shoreline of less than 50 feet over the study interval. Beach erosion and deposition trends are closely tied to the occurrence and morphological variations of tidal inlets. Limits for set back lines and areas suitable and unsuitable for development can be defined directly from the erosion-deposition graphs presented.

N75-21772/9GA PC$10.25/MF$2.25
Louisiana State Univ., Baton Rouge. Dept. of Mechanical, Aerospace and Industrial Engineering.
Investigation of Land-Use Spectral Signatures.
Ph.D. Thesis. Final Report.
J. F. Hagewood. Mar 75, 378p NASA-CR-120724
Contract NAS8-30620

Descriptors: *Land use, *Spectral reflectance, *Spectral signatures, Data acquisition, Spectroradiometers.

For abstract, see STAR 1313

N75-21773/7GA PC$5.75/MF$2.25
Alaska Univ., Fairbanks.
Application of Remote Sensing Data to Surveys of the Alaskan Environment.
Annual Report, 1 Jul. 1973 - 30 Jun. 1974.
A. E. Belon, and J. M. Miller. 30 Jun 74, 141p NASA-CR-142519
Contract NGL-02-001-092

Descriptors: *Alaska, *Remote sensors, *Resources management, *Technology utilization, Data processing, Earth resources program, Technology transfer.

For abstract, see STAR 1313

N75-21774/5GA PC$3.75/MF$2.25
State Univ. of New York Research Foundation, Albany.
Remote Sensing: An Inventory of Earth'S Resources.
N. Gramenopoulos. 1974, 37p NASA-CR-142614
Contract NASW-2508

Descriptors: *Earth resources program, *Landsat satellites, *Remote sensors, Earth resources, Imagery, Resources management, Satellite observation, Urban planning.

For abstract, see STAR 1313

N75-21777/8GA PC$6.25/MF$2.25
National Aeronautics and Space Administration. Lyndon B. Johnson Space Center, Houston, Tex.
The ERTS-1 Investigation (Er-600): A Compendium of Analysis Results of the Utility of ERTS-1 Data for Land Resources Management.
R. B. Erb. Nov 74, 170p NASA-TM-X-58156, JSC-08455
Misc-Original Contains Color Illustrations.

Descriptors: *Agriculture, *Coastal ecology, *Forests, *Ground truth, *Infrared imagery, *Land use, *Rangelands, *Resources management, *Urban development, Data processing, Earth resources program, Mapping, Photointerpretation, Remote sensors.

For abstract, see STAR 1313

8G. Geology and Mineralogy

AD-A010 561/9GA PC$3.25/MF$2.25
Rochester Univ N Y Dept of Geological Sciences
The Form and Growth of Fingered Sheet Intrusions,
David D. Pollard, Otto H. Muller, and David R. Dockstader. 10 Dec 73, 15p ARO-10538.5-EN
Grant DA-ARO-D-31-124-72-G149
Availability: Pub. in Geological Society of America Bulletin, v86 p351-363 Mar 75.

Descriptors: *Structural geology, *Montana, Faults(Geology), Sandstone, Shale, Intrusion, Igneous rock, Reprints.

The form of several sheet intrusions in a sandstone-shale host rock is regular, but much more complex than the term 'sheet intrusion' implies. The periphery of a sill emanating from the Shonkin Sag laccolith in Montana is composed of fingers of igneous rock with lengths of about 100 m, widths of 3 to 5 m, and thicknesses which vary from about 1.2 m near their points of coalescence to about 0.6 m near their terminations. At finger terminations, the host rock is wedged aside and compacted, and along the sides of fingers, buckling and shearing of strata are common. Energy expended by magma to dilate and flow through a sheet is small compared to that for fingers. Initiation of fingers is attributed to instability of the advancing interface between a viscous magma and a more viscous host rock. Fingers coalesce into a sheet such that cusp-shaped grooves filled with deformed host rock remain in the contact. Systematic offsets of sheet-intrusion contacts form where offset fingers coalesce. Several large dikes (5 to 20 m thick) near La Veta, Colorado, exhibit contact offsets of as much as 3 m in magnitude, which give the dike the appearance of a clapboard wall. Small dikelets, horns, often project from the outer edge of offsets. If fingers grow in a surface perpendicular to the least principal compressive stress, offsets may develop as the intrusion propagates through a region where this stress changes orientation. Grooves and offsets form parallel to finger lengths and thus indicate the propagation direction of the intrusion. Flow of magma subsequent to finger coalescence may not be parallel to the propagation direction. (Author)

AD-A010 696/3GA PC$3.25/MF$2.25
Lamont-Doherty Geological Observatory Palisades N Y
Sediments and Structure of the Japan Sea.
Journal article,
William J. Ludwig, Sadanori Murauchi, and Robert E. Houtz. 28 Jan 74, 16p Rept no. LDGO-2186
Contract N00014-67-A-0108-0004
Availability: Pub. in Geological Society of America Bulletin, v86 p651-664 May 75.

Descriptors: *Marine geology, *Sediments, *Structural geology, *Japan Sea, Sonobuoys, Seismic reflection, Basins(Geographic), Reprints.
Identifiers: Marginal ocean basing.

It is likely that the Japan Sea existed essentially in its present form prior to the beginning of the movements (in late Oligocene or early Miocene) that resulted in the present arcuate structure of Japan. Evidence of seismic velocity and layer thickness, rough local relief, large amplitude magnetic anomalies compared to the basins, low value of free-air gravity anomalies, dredged volcanics from the crestal surfaces, and granitic rock from the flanks, all indicate that Yamato Ridge is primarily a large welt of volcanic material intruded by granite on a thick layer of material with oceanic-type velocity. This can be interpreted to mean that Yamato Ridge is an integral part of the island-arc system of Japan, rather than a fragment of Siberia that has broken away and drifted out to its present location. The dredged basalt and andesite samples of Pliocene-early Miocene age from Yamato Ridge reflect the period of Neogene volcanism on the Japanese mainland. Late Paleozic-early Mesozoic plutonic intrusives of Japan are thought to be related to the regional metamorphism and tectonic movements that occurred during that time. It is reasonable to suppose, therefore, that the granites of Yamato Ridge may be related to the Hida metamorphism of late Paleozoic age, because the K-Ar age (197 to 220 m.y.) of the dredged granitic rocks may be biased lower than the solidification age due to potassium addition from sea water into the rock during exposure. Hida metamorphics are exposed on Oki Island, Noto Peninsula, and along the Northern part of the Hida mountains near Toyama Bay.

AD-A010 849/8GA PC$3.75/MF$2.25
Northwestern Univ Evanston Ill Dept of Geological Sciences
Appropriate Units for Expressing Chemical Composition of Igneous Rocks,
E. H. Timothy Whitten. 23 May 73, 27p ARO-9894.3-EN
Grant DA-ARO-D-31-124-72-G54
Availability: Pub. in Geological Society of America Memoir 142, p283-308 1975.

Descriptors: *Igneous rock, Chemical composition, Cations, Oxides, Petrology, Density, Granite, Reprints.

Chemical analyses should be expressed as cation or oxide weights per unit volume (instead of the traditional weights percent) for almost all chemical, petrogenetic, and economic studies of rocks. For many purposes, the use of oxide or cation weights percent may yield misleading information about the interrelations between chemical variables of igneous rocks. Apparent trends among cogenetic igneous rocks differ, or are even reversed, when expressed as weights per unit volume and as weights percent. Specific illustrations are based on published data for the Palisades and Lugar Sills and for numerous other garnitic and mafic plutonic igneous masses for which density data have been published. (Author)

AD-A011 071/8GA PC$3.25/MF$2.25
Massachusetts Inst of Tech Cambridge
Quasi-Static Strains and Tilts Due to Faulting in Viscoelastic Half-Space,
Martin Rosenman, and Sarva Jit Singh. 5 Apr 73, 18p AFOSR-TR-75-0706
Contract F44620-71-C-0049, ARPA Order-1827
Availability: Pub. in Bulletin of the Seismological Society of America, v63 n5 p1737-1752 Oct 73.

Descriptors: *Geophysics, Faults(Geology), Stress strain relations, Viscoelasticity, Displacement, Equations of motion, Contours, Maps, Elastic properties, Mathematical models, Reprints.

Recently derived quasi-static surface displacements resulting from a finite rectangular vertical strike-slip fault in a visco-elastic half-space

are used to derive the surface strains and tilts for both Voigt and Maxwell viscoelastic models. Contour maps are obtained for various strain and tilt components. The variation with time and epicentral distance is studied in some representative cases. detailed numerical calculations reveal significant differences between the viscoelastic and the elastic results in the case of a vertical strike-slip fault. This contrasts with the results for a vertical dip-slip fault in a uniform half-space, where the surface strains and tilts for the viscoelastic and the elastic models are identical. (Author)

ERDA-tr-18 PC$5.50/MF$2.25
Energy Research and Development Administration, Washington, D.C.
Description of the Main Brazilian Uranium Deposits.
A. C. Maciel, and P. R. Cruz. Feb 75, 50p
Translated by I.A. Leonard (W.J. Grimes and Co.), from a Brazilian paper.

Descriptors: (*Brazil, Uranium deposits), (*Uranium deposits, *Geological surveys), Geology, Prospecting, Uranium reserves.

For abstract, see NSA 31 12, number 33003.

E75-10284 PC$3.25/MF$2.25
California Earth Science Corp., Santa Monica.
Fault Tectonics and Earthquake Hazards in the Peninsular Ranges, Southern California.
Monthly progress rept. no. 23,
Paul M. Merifield. 5 May 75, 2p NASA-CR-142721
Contract NAS2-7698

Descriptors: *Tectonics, Southern California, Geological faults, Earthquakes, Mojave Desert(CA), EREP, Skylab program, Seismic waves, Multispectral band scanners.

The author has identified the following significant results. Images of SL2 EREP Pass 2, S192 channels were generated, with six channels usable. Analysis of SL4 photographs of the Mojave Desert were continued. An overflight was made along several active faults. A number of topographic indicators of recent faulting are identifiable in Skylab photos, particularly S190B photos.

E75-10288 PC$3.25/MF$2.25
Rockwell International Corp., Thousand Oaks, Calif. Science Center.
Identification and Interpretation of Tectonic Features from Skylab Imagery.
Monthly rept.,
Monem Abdel-Gawad. 15 May 75, 4p
SC5007.12MR NASA-CR-142723
Contract NAS9-14440

Descriptors: *Tectonics, Photointerpretation, Geological faults, Mojave Desert(CA), Mountains, EREP, Imagery, Skylab program, Roads, Image contrast.

The author has identified the following significant results. Surface indications of recent faulting are generally observed in EREP S190B photographs. Comparison of secondary roads (asphalt and dirt) registered in EREP and U-2 photographs together with field measurements shows that dirt and asphalt roads about seven meters wide can be detected in EREP S190B photographs where sufficient contrast exists between the tone of the road surface and surrounding terrain. In low contrast cases, roads more than ten meters wide could not be detected.

8H. Hydrology and Limnology

BNWL-1950(Pt.2) PC$7.60/MF$2.25
Battelle Pacific Northwest Labs., Richland, Wash.
Pacific Northwest Laboratory Annual Report for 1974 to the Usaec Division of Biomedical and Environmental Research. Part 2. Ecological Sciences.
B. E. Vaughan. Dec 74, 250p
Contract AT(45-1)-1830

Descriptors: (*Hapo, *Environment), Ecology, Leading abstract, Radioactive effluents, Radioactive waste management, Radionuclide kinetics, Radionuclide migration, Research programs, Thermal effluents, Waste management.

For abstract, see NSA 31 12, number 33137.

E75-10286 PC$5.25/MF$2.25
Corps of Engineers, Waltham, Mass. New England Div.
The Use of ERTS Imagery in Reservoir Management and Operation.
Final rept.,
Saul Cooper, Paul Bock, Joseph Horowitz, and Dennis Foran. Mar 75, 118p NASA-CR-142709
NASA Order S-70256-AG
Prepared in cooperation with Connecticut Univ., Storrs. Original contains color imagery. Original photography may be purchased from the EROS Data Center, 10th and Dakota Ave., Sioux Falls, S.D. 57197.

Descriptors: Water management, Reservoirs, New England(US), Watersheds, Hydrometeorology.

The author has identified the following significant results. Real time data collection by orbiting satellite relay was found to be both reliable and feasible. ERTS imagery was assessed and it was shown that in most cases better spatial resolution and/or additional spectral bands would be required to satisfy NED's needs. A man-computer interactive system, using cathode ray tube display could solve the problem of an unwieldly mass of data for interpretation.

HASL-291 PC$7.60/MF$2.25
Energy Research and Development Administration, New York Health and Safety Lab.
Health and Safety Laboratory Environmental Quarterly, December 1, 1974--March 1, 1975.
E. P. Jr. Hardy. 1 Apr 75, 235p

Descriptors: (*Transuranium elements, *Environmental effects), (*Radioisotopes, Environmental effects), Leading abstract, Radiation monitoring, Safety.

For abstract, see NSA 31 12, number 33093.

HASL-291(App.) PC$10.60/MF$2.25
Energy Research and Development Administration, New York Health and Safety Lab.
Appendix to Health and Safety Laboratory Environmental Quarterly, December 1, 1974--March 1, 1975.
E. P. Jr. Hardy. 1 Apr 75, 474p

Descriptors: (*Strontium 90, *Radiation monitoring), (*Strontium 89, Radiation monitoring), (*Surface air, Radiation monitoring), (*Radioisotopes, Radiation monitoring), Data, Deposition, Fallout, Lead, Milk, Tables, Water.

For abstract, see NSA 31 12, number 33105.

HASL-292 PC$5.45/MF$2.25
Energy Research and Development Administration, New York Health and Safety Lab.
Index of Interpretive Articles Published in the Health and Safety Laboratory Fallout Program, Quarterly Summary Reports: 1958 Through January 1, 1975.
H. L. Volchok. 1 Apr 75, 79p

Descriptors: (*Fallout, *Bibliographies), Radiation monitoring.

For abstract, see NSA 31 12, number 33106.

LBL-2486 PC$6.25/MF$2.25
California Univ., Berkeley Lawrence Berkeley Lab.
Monitoring Radiation in the Environment Due to Nuclear Reactors.
R. M. Graven, and R. J. Budnitz. 4 Jan 74, 61p
Contract W-7405-eng-48

Descriptors: (*Radiation monitors, *Reliability), (*Nuclear power plants, Radiation monitoring), (*Radiation monitoring, *Regulatory guides), Environment, Gaseous wastes, Liquid contamination monitors, Liquid wastes, Natural radioactivity, Radiation protection, Radioactive waste storage, Reactor accidents, Reactor operation, Reactors, Safety standards, Surface contamination monitors, Usa.

For abstract, see NSA 31 12, number 33108.

ORNL-5016 PC$7.60/MF$2.25
Oak Ridge National Lab., Tenn.
Environmental Sciences Division Annual Progress Report for Period Ending September 30, 1974.
C. I. Taylor. Mar 75, 185p
Contract W-7405-eng-26

Descriptors: (*Ecosystems, *Radionuclide migration), (*Radioisotopes, *Radioecological concentration), (*Environment, *Research programs), Leading abstract.

For abstract, see NSA 31 12, number 33132.

PB-241 531/3GA PC$6.25/MF$2.25
Washington State Water Research Center, Pullman.
Model Development and Systems Analysis of the Yakima River Basin. Hydraulics of Surface Water Runoff.
Final rept. 1 Jul 70-30 Jun 74,
Howard D. Copp, and David T. Higgins. Nov 74, 164p 17B W75-07278, OWRT-B-036-WASH(4)
Contracts DI-14-31-0001-3348, DI-14-31-0001
Sponsored in part by Contract DI-14-31-0001-3944. Prepared in cooperation with Washington State Univ., Pullman. R. L. Albrook Hydraulic Lab.

Descriptors: *Surface water runoff, *Water management, *Yakima River Basin, Systems analysis, Watersheds, Hydraulic models, Probability theory, Computerized simulation, Forecasting, Streamflow, Computer programs, Washington(State).

A computer model is described that is an accounting of water quantity in the Yakima River that flows from upper watershed outlet. The model adds tributary streams at confluences, and subtracts withdrawals from the stream. The model is deterministic; water quantities must be specified. However, with (a) separate analyses to define water runoff at various levels of probability and (b) model use with these runoff quantities, future probabilistic events and their consequences can be analyzed. Model development recognized the flexibility which water planning must have. Accordingly, the user has considerable freedom in establishing (1) watershed description, (2) the stream system, (3) quantities of flow in the streams, (4) positions and quantities of withdrawals and/or return flows, (5) location and operation rules of storage reservoirs, and (6) flow quantities needed to meet above-mentioned requirements. The model is thus capable of simulating many water management plans, existing or envisioned, and a wide range of water quantity regimes.

PB-241 541/2GA PC$3.25/MF$2.25
Geological Survey, Salt Lake City, Utah. Water Resources Div.
Estimating Streamflow Characteristics for Streams in Utah Using Selected Channel-Geometry Parameters.
Final rept.,
Fred K. Fields. Feb 75, 24p USGS/WRI-34-74, USGS/WRD-75/023
Prepared in cooperation with Utah State Dept. of Highways, Salt Lake City.

Descriptors: *Stream flow, *Floods, Surface water runoff, Channels(Waterways), Measurement, Estimates, Utah.
Identifiers: *Flood peak.

Channel-geometry parameters are related to mean annual streamflow and the 25- and 50-year recurrence-interval flood discharges of Utah streams. Channel width and depth between depositional bars can be used to estimate mean annual streamflow for perennial streams with a standard error of estimate of 34%. The standard error of estimate of mean annual streamflow for ephemeral streams is 73%. The 25- and 50-year floods on perennial and ephemeral streams can be estimated from the channel width between depositional bars with standard errors of estimate ranging from 28 to 43%.

PB-241 740/0GA PC$9.25/MF$2.25
Massachusetts Inst. of Tech., Cambridge. Ralph M. Parsons Lab. for Water Resources and Hydrodynamics.
Stochastic Modeling of Groundwater Systems,
Lynn W. Gelhar, Peter Y. Ko, Herman H. Kwai, and John L. Wilson. Sep 74, 315p 189, R74-46 W75-07595, OWRT-C-4119(9022)(2)
Contract DI-14-31-0001-9022

Descriptors: *Ground water, *Aquifers, *Stochastic processes, Time series analysis, Power spectra, Mathematical models, Partial differential equations, Numerical integration, Computer programs.

This research developed important new results on the use of spectral analysis techniques to evaluate groundwater resources. The linear theory of aquifer spectral response in the frequency domain is developed, including effects of aquifer slope, vertical flow, variable transmissivity and other features. Numerical simulations of the nonlinear effects in the spectral domain are developed and show that the nonlinear effects are typically quite small, thus making the simple linear theory applicable for most field situations. The results of the study should be applicable specified conditions to the estimation of aquifer parameters from natural fluctuations of groundwater level.

PB-241 896/0GA PC$4.75/MF$2.25
Nevada Univ., Reno. Center for Water Resources Research.
Cooperative Phenomena in Isotopic Hydrodynamic Dispersion.
Project rept. no. 30,
C. M. Case, and C. L. Carnahan. Apr 75, 91p W75-07725, OWRT-A-048-NEV(1)
Contract DI-14-31-0001-3828

Descriptors: *Water pollution, *Ground water, *Surface waters, *Isotopes, Tritium, Diffusion, Statistical mechanics, Hydrodynamics, Dispersion relations, Molecular structure.
Identifiers: *Path of pollutants.

The study theoretically examines the effects on the rate of hydrodynamic dispersion of two types of dispersing material - isotopic (tritium) and suspended - as an example of cooperative phenomena using statistical mechanics. By these means a preliminary formula describing hydrodynamic dispersion in relation to pollutants in water was developed. For clusters with higher binding energy, corresponding either to a higher concentration of isotopes or larger atomic numbers, e.g., tritium versus deuterium, more thermal energy is required to achieve a given level of dispersion. For removal of water molecules from the cluster, the curves of entropy versus temperature lie below each other as successive configurations contain fewer and fewer radioactive isotopes. Lower concentrations of radioactive isotopes mean lower binding energy in the cluster and hence less energy is necessary to go from one configuration to the next. The relative values of Helmholz free energy and entropy are of use in describing the diffusion of deuterium and tritium in water.

PB-242 117/0GA PC$3.75/MF$2.25
Michigan State Univ., East Lansing. Inst. of Water Research.
Hydrological Studies of the Saginaw Formation in the Lansing, Michigan Area - 1962.
Technical rept. no. 9,
Assadolah Firouzian. Aug 70, 38p MSU-IWR-TR-70-0009
Sponsored in part by Office of Water Resources Research, Washington, D.C.

Descriptors: *Hydrogeology, *Sandstones, Glacial deposits, Aquifers, Ground water recharge, Precipitation(Meteorology), Seepage, Maps, Michigan.
Identifiers: *Saginaw Formation, Lansing(Michigan).

The purpose of this investigation was to study the hydrological characteristics of the Saginaw Formation in the Lansing, Michigan area. The water-bearing beds of sandstone in the Saginaw Formation are the principal source of water for the greater Lansing area including the Cities of Lansing and East Lansing, Michigan State University, industrial plants and also surrounding townships. The Saginaw Formation is the bedrock formation in the area and is overlain by Pleistocene glacial deposits. The average transmissibility of the Saginaw Formation as determined by flow net analysis on the basis of 1962 piezometric map is 23,000 gallons per day per foot. The study showed that the aquifer is recharged from the Grand River at the rate of three million gallons per day. The average recharge from precipitation into the aquifer is estimated at 4.8 inches per year. The amount of water discharged by pumpage is balanced by the amount of water recharged into the area.

PB-242 312/7GA PC$4.25/MF$2.25
New Mexico State Univ., University Park. Water Resources Research Inst.
Measurement of the Horizontal Component of Ground Water Flow Using a Vertically Positioned In-Situ Thermal Probe.
Technical completion rept.,
Stephen G. McLin, Marshall A. Reiter, and Allan R. Sanford. May 75, 42p WRRI-055 W75-08490, OWRT-A-044-NMEX(1)
Prepared in cooperation with New Mexico Inst. of Mining and Technology, Socorro. Dept. of Geoscience.

Descriptors: *Thermal measuring instruments, *Ground water, *Base flow, Calibrating, Thermal conductivity, Boreholes, Flow rate.
Identifiers: Groundwater movement.

A thermal probe for the in-situ measurement of groundwater flow rates in a borehole was calibrated in a vertical position. The probe is a long slender metal rod having a heat source along its entire length and a temperature sensor at its midpoint. When a constant quantity of heat is applied to the probe. Full scale calibration of the probe was considered necessary because theoretical studies over-simplify the interaction between the heated probe and the horizontal flow of groundwater.

SR-639-15 PC$4.00/MF$2.25
Georgia Univ., Athens Dept. of Zoology.
Flux of Radionuclides Through a Salt Marsh. Progress Report, July 1, 1974--June 30, 1975.
L. R. Pomeroy, and E. P. Odum. 15 Mar 75, 11p
Contract AT(38-1)-639

Descriptors: (*Radioisotopes, *Diffusion), (*Georgia, Aquatic ecosystems), (*Aquatic ecosystems, *Radionuclide migration), Coastal waters, Communities, Estuaries, Microorganisms, Plankton, Radioactivity, Radionuclide kinetics, Seawater, Sediments, Shores.

For abstract, see NSA 31 12, number 33145.

8I. Mining Engineering

PB-241 867/1GA PC$8.50/MF$2.25
Hazen Research, Inc., Golden, Colo.
Process Technology for Recovering Geothermal Brine Minerals,
C. E. Berthold, Pablo Hadzeriga, David H. Christopher, Thomas A. Applegate, and Daniel M. Gillespie. 4 Feb 74, 255p BuMines-OFR-35-75
Contract S0133084

Descriptors: *Brines, *Materials recovery, *Minerals, Geothermy, Geochemistry, Sampling, Water analysis, Economic geology, Geochemistry, Extraction, Sodium chloride, Potassium carbonates, Lithium, Manganese, Barium, Strontium, Load(Metal), Zinc, Bromine, Demand(Economics), California, Nevada.
Identifiers: *Geothermal resources.

Geothermal fluids and hot springs waters from California and Nevada were sampled and analyzed to provide a basis for process development and economic studies on the potential for recovering valuable minerals from these fluids. In general, bulk precipitation methods were used to remove the valuable constituents from the geothermal fluids, followed by separation of the constituents from this bulk precipitate. Concentration of geothermal fluids to recover soluble saline constituents such as sodium chloride and calcium chloride does not appear practical, owing primarily to the probable need for reinjecting such fluids back into the production zone.

PB-241 868/9GA PC$4.75/MF$2.25
Virginia Polytechnic Inst. and State Univ., Blacksburg. Div. of Minerals Engineering.
Preparation of Pure and Impurity-Stabilized Polymorphs of Silica in the Minus Five Micron Particle Size Range by Non-Comminution Techniques.
Final rept. 1 Jun 72-31 Aug 73,
Jesse J. Brown, Jr., and Douglas F. Craig. 1 Sep 73, 81p BuMines-OFR-34-75
Grant G0122068

Descriptors: *Dust, *Silicosis, *Silica minerals, *Silicate minerals, Quantitative analysis, Chemical analysis, Standards, X ray diffraction, Particle size, Crystal structure, Polymorphism, Temperature, Quartz, Chert, Flint, Clay minerals, Cristobalite, Rocks, Mine dust, Barium inorganic compounds, Yttrium compounds, Phosphates.

At the present time the quantitative analysis of silica is of considerable importance to a number of governmental and industrial laboratories. The Mining and Safety Research Center of the U.S. Bureau of Mines is especially interested in this problem area because of their current activity in respirable dust analysis. The problem of analyzing silica in a composite dust sample is particularly difficult because of the large number of different forms that commonly exist in nature. In the present research, an attempt was made to prepare in the pure state those silica phases that are ordinarily observed in minerals. Some 60 samples of assorted dusts

were prepared, including quartz, cristobalite, tridymite, kaolinite, calcite, muscovite, illite, montmorillonite, Ba3(PO4)2, and YPO4. Several samples were prepared to include iron, manganese, and titanium impurities. These samples can be used to check analytical techniques being developed for field dust samples.

PB-241 942/2GA PC$5.75/MF$2.25
Battelle Columbus Labs., Ohio.
Environmental Considerations for Oil Shale Development.
Final rept. Jan-May 74,
Nick Conkle, Vernon Ellzey, and Keshava Murthy. Oct 74, 133p EPA/650/2-74-099
Contract EPA-68-02-1323

Descriptors: *Oil shale industry, *Environmental impacts, Oil shale deposits, Oil shale processing plants, In situ processing, Shale oil, Air pollution, Solid waste disposal, Mining, Retorting, Spoil.
Identifiers: Gas combustion process, Union oil process, Petrosix process, Tosco process.

The report provides an overview of the anticipated oil shale industry, including the magnitude of the resources available and the likely technical environmental problems to be encountered. Specific technologies likely to be employed in the mining, oil extraction, and on-site upgrading processes are also identified. The status of development of these technologies and their potential economic, resource, and environmental impacts upon the oil shale resource regions and the nation as a whole are also described.

PB-242 129/5GA PC$3.25/MF$2.25
Bureau of Mines, Tuscaloosa, Ala. Tuscaloosa Metallurgy Research Lab.
Substitution of Phosphate Slime for Bentonite in Geothermal Well Drilling Fluids.
Rept. of investigations 1975,
Alan H. Goode, and Leon Y. Sadler, III. Apr 75, 13p BuMines-RI-8032

Descriptors: *Geothermal wells, *Drilling fluids, Slime, Phosphate deposits, Bentonite, Clay minerals, Rheology, Viscosity, Filtration, Temperature, Salinity, Substitutes, Solid waste disposal, Reclamation.
Identifiers: Waste recycling, *Phosphate rock slime.

The advancement of high-temperature drilling fluid technology for application in geothermal environments is part of the Bureau of Mines program for more efficient development of our Nation's energy resources. The bentonite constituent of water-base drilling fluids is sensitive to destabilization by high-temperature and salinity. A substitute material for bentonite, phosphate slime, which is reported to be saline resistant was considered. These studies show that spray-dried slime suspensions have more favorable rheological behavior, but poorer filtration properties as compared to bentonite suspensions.

8J. Physical Oceanography

AD-A010 547/8GA PC$3.75/MF$2.25
Texas Univ At Austin Applied Research Labs
Studies of Sediment Shear Waves, Acoustical Impedance, and Engineering Properties.
Technical Rept.,
Donald J. Shirley, and Aubrey L. Anderson. 7 May 75, 50p Rept no. ARL-TR-75-23
Contract N00014-70-A-0166-0017
See also AD-A003 910.

Descriptors: *Oceanographic equipment, Ocean bottom, Sediments, Cores, Profiles, Acoustic impedance, Acoustic velocity, Acoustic attenuation, Shear strength, Soil tests, Transducers.
Identifiers: Profilometers.

Compressional wave speed and attenuation have been meausred in situ with the ARL/UT compressional wave profilometer. As an extension of this work, studies have been made of the feasibility of measuring shear wave speed and attenuation, as well as sediment bulk density in situ, using similar techniques. Various transducer configurations have been constructed and tested. Preliminary data have been measured using some of the transducers. Concurrent measurements of engineering properties enable comparisons to be made with acoustic properties. Instruments have been contructed to measure several sediment engineering parameters including Atterberg limits and vane shear strength.

AD-A010 583/3GA PC$5.25/MF$2.25
Scripps Institution of Oceanography La Jolla Calif
Physical, Chemical and Biological Data, Climax II Expedition, 27 August - 13 October 1969.
Data rept.
1 May 75, 109p Rept no. SIO-Ref-75-6
Contract N00014-75-C-0153
Sponsored in part by National Science Foundation, Washington, D.C.

Descriptors: *Oceanographic data, *Marine biology, *North Pacific Ocean, Sea water, Temperature, Salinity, Plankton, Chlorophylls, Oxygen, Inorganic compounds, Phosphates, Nitrates, Sampling, Oceanographic ships, Tables(Data).
Identifiers: Primary biological productivity, Biomass, Climax 2 vessel.

The expedition was the second of a series to the North Pacific Central Gyre. The purpose of this research was to acquire information on the community structure and function in an area thought to be relatively homogeneous with respect to the distributions of physical, chemical and biological variables. By examination of early data and because of biogeographic evidence, the area 28 degrees N 155 degrees W was selected as 'representative' of a much larger area within the Gyre.

AD-A010 946/2GA PC$3.25/MF$2.25
Scripps Institution of Oceanography San Diego Calif Marine Physical Lab
Abyssal Dunes of Foraminiferal Sand on the Carnegie Ridge.
Summary rept.,
Peter F. Lonsdale, and Bruce Malfait. 26 Dec 73, 22p Rept no. MPL-U-48/72
Contract N00014-69-A-0200-6002, Grant NSF-GA-31377X
Availability: Pub. in Geological Society of America Bulletin, v85 p1697-1712 Nov 74.

Descriptors: *Marine geology, *Sand, *Abyssal zones, Pacific Ocean, Sedimentation, Ocean bottom topography, Reprints.
Identifiers: Sand dunes, Carnegie Ridge.

A field of sand dunes was discovered by the side-looking sonars of a deep-towed geophysical instrument package at a water depth of 2.65 km on the north flank of the Carnegie Ridge in the eastern equatorial Pacific. The dunes are moving down the flat floor of an erosional valley that has been excavated through calcareous ooze to a resistant, manganese-encrusted chalk stratum. Transverse dunes (mean wave length 20m) and barchans (length 6 to 80m) are arranged in long, narrow belts. Stereo photographs (875 oriented pairs) of the dunes and of the current-swept rock floor show that average dune height is approx. 0.6m, the steep (25 to 30 deg), lee side is generally smooth, and the upstream slope is covered with short-crested current ripples. A core from a transverse dune recovered moderately sorted sand, composed of broken fragments (70 percent) and intact tests of Quaternary age Foraminifera. Photographs and sidelooking sonar records both indicate a north-westward, down-valley sediment transport. The dunes are thought to be formed and propelled by fast (>30cm/sec) currents of dense water, which spill episodically over the Carnegie Ridge into the Panama Basin.

AD-A011 105/4GA PC-GPO/MF$2.25-NTIS
National Geophysical and Solar-Terrestrial Data Center Boulder Colo
Marine Geophysical Data Catalog - 1975.
Feb 75, 387p
Key to Geophysical Records Documentation no. 4.
Availability: Paper copy available from GPO.

Descriptors: *Marine geophysics, Catalogs, Bathymetry, Geomagnetism, Ocean bottom, Gravity, Seismic reflection, Echo ranging, Navigation charts, Surveys, Oceanographic ships, Maps, Indexes, Graphs.

Marine Geophysical Data Catalog--1975, Key to Oceanographic Records Documentation No. 4, National Oceanic and Atmospheric Administration, February 1975, lists marine geophysical data that are available from the National Geophysical and Solar Terrestrial Data Center of the Environmental Data Service, NOAA. It includes bathymetric, magnetic, gravity, seismic, and navigation data, indicates types of records and data formats, identifies specific projects, cruises, or surveys, and depicts geographical distribution of the data by area index charts. This 1975 catalog supersedes the Marine Geophysical Data Catalog, Key to Geophysical Records Documentation No. 1, published June 1972.

JPRS-64644 PC$4.75/MF$2.25
Joint Publications Research Service, Arlington, Va.
Geophysical Methods for Studying the Ocean,
S. M. Zverev. 28 Apr 75, 83p
Trans. of mono. Metodika Geofizicheskikh Issledovanii Okeanov, Moscow, 1974 p27-48, 77-81, 82-89, 90-102, 103-120.

Descriptors: *Ocean bottom, *Marine geophysics, Seismic reflection method, Echo sounding, Gravity anomalities, Gravimeters, Translations, USSR.

Contents:
- Seismic investigations of the sedimentary stratum at sea, using the reflected wave method;
- Determining the speed of sound in sediments during seismic profiling;
- Geoacoustic profiling while studying the sedimentary stratum's structure;
- Marine gravimetric observations;
- Interpreting marine gravimetric observations.

8K. Seismology

AD-A010 556/9GA PC$3.25/MF$2.25
Computer Corp of America Cambridge Mass
Datacomputer Support of Seismic Data Activity.
Quarterly technical rept. 1 Feb-30 Apr 75.
30 May 75, 15p
Contract MDA903-74-C-0227, ARPA Order-2613
See also report dated 21 Mar 75, AD-A006 932.

Descriptors: *Seismic data, *Data processing, *Data storage systems, Information retrieval, Communications networks, Interfaces.
Identifiers: ARPA computer network, Computer networks.

The purpose of the project is to support the ARPA-NMRO Seismic Data Activity by providing data storage and retrieval services.

AD-A010 850/6GA PC$4.75/MF$2.25
Naval Postgraduate School Monterey Calif
Single-Channel Prediction for Earth Tidal Tilt Data.
Master's thesis,
Chien-Wu Chang. Mar 75, 79p

Descriptors: *Earthquakes, *Tides, *Seismic detection, Time series analysis, Stochastic processes, Geopotential, Mathematical models, Matrices(Mathematics), Computations, Computer programs, Theses.
Identifiers: PREDICT computer program, Wiener-Hopf equations.

The earth tidal tilt data consists of two parts: one is the theoretical part caused by the tidal potential of the moon and the sun; another one is the seismic noise part that originates from meteorological, hydrodynamic, and cultural sources. The theoretical part is completely determinable by astronomical data. The seismic noise may be considered as a stationary stochastic process over short periods of time when there have been no great changes in the source mechanisms. Based on the above assumption, prediction and interpolation of the earth tidal tilt data can be achieved by solving the Wiener-Hopf equation. A computer program 'PREDICT' is derived by using Levinson's recursive method to solve the discrete-time Wiener-Hopf equation. Test results on real data are satisfactory. Besides the earth tidal tilt data, the 'PREDICT' program can also be applied to any stationary stochastic discrete-time signal.

AD-A011 067/6GA PC$3.25/MF$2.25
Massachusetts Inst of Tech Cambridge
An Event-Recording System for Monitoring Small Earthquakes,
Bruce P. Ambuter, and Sean C. Solomon. 9 Jan 74, 10p AFOSR-TR-75-0702
Contract F44620-71-C-0049, ARPA Order-1827
Availability: Pub. in Bulletin of the Seismological Society of America, v64 n4 p1181-1188 Aug 74.

Descriptors: *Microseisms, *Magnetic recording systems, Ocean bottom, Remote Systems, Ground motion, Low costs, Buffer storage, Memory devices, Reprints.

To monitor small earthquakes on the ocean bottom or in remote areas on land, a seismic recording system should operate at low power for extended periods of time, should reproduce three components of ground motion with a large dynamic range, and should preferably be small and inexpensive. We describe such a system based on an event detector, which continuously surveys the background noise, sets a threshold, and triggers an inexpensive digital tape recorder when a seismic signal exceeds that threshold. Event recording offers the advantages over conventional continuous recording of more efficient use of storage capacity and easier later interpretation. A key element of the system is a continuously updated semiconductor buffer memory, which assures that first arrivals are included. Average power consumption is about a watt. The system design is easily adaptable to monitoring other types of rare events of upredictable occurrence. (Author)

AD-A011 068/4GA PC$3.75/MF$2.25
Massachusetts Inst of Tech Cambridge
Evolution of the Downgoing Lithosphere and the Mechanisms of Deep Focus Earthquakes,
M. Nafi Toksoz, Norman H. Sleep, and Albert T. Smith. 25 Apr 73, 28p AFOSR-TR-75-0707
Contract F44620-71-C-0049, ARPA Order-1827
Availability: Pub. in Geophysical Jnl. of the Royal Astronomical Society, v35 n1-3 p285-310 1973.

Descriptors: *Earthquakes, Tectonics, Geophysics, Lithosphere, Plates, Thermal diffusion, Anomalies, Stresses, Elastic properties, Mathematical models, Reprints.
Identifiers: Deep focus earthquakes, Plate tectonics.

The thermal evolution of the lithospheric slab at subduction zones and its geophysical effects are numerically calculated. An alternating-direction implicit, finite-difference scheme is used to compute the thermal models taking into account all heating sources and phase boundaries. These models, with the appropriate spreading rates and dip angles, are compared with different island arc systems. Temperatures inside the slab are strongly controlled by conductivity and by the time elapsed since the initiation of descent. The depth to which temperature anomalies persist is generally about 700 km or less. The thermal results are used to construct the seismic velocities and ray paths, density anomalies, and the resulting stress distribution. Comparing the theoretical stress distribution and the focal mechanism studies of intermediate- and deep-focus earthquakes indicates the importance of both the mantle's rheology and the temperature dependence of the slab's elastic properties. The intermediate and deep focus earthquakes are located along the coolest region of the slab. The theoretical results explain the source mechanisms and the orientation of principal stresses under major island arcs. (Author)

AD-A011 069/2GA PC$3.25/MF$2.25
Massachusetts Inst of Tech Cambridge
Fault Parameters Determined by Near- and Far-Field Data: The Wakasa Bay Earthquake of March 26, 1963,
Katsuyuki Abe. 27 Mar 74, 16p AFOSR-TR-75-0704
Contract F44620-71-C-0049, ARPA Order-1827
Availability: Pub. in Bulletin of the Seismological Society of America, v64 n5 p1369-1382 Oct 74.

Descriptors: *Earthquakes, Japan, Faults(Geology), Seismic waves, Velocity, Dislocations, Tectonics, Epicenters, Seismographs, Reprints.
Identifiers: Wakasa Bay(Japan), De Hoop-Haskell method.

The source process of the Wakasa Bay earthquake (M = 6.9, 35.80 N, 135.76 E, depth 4 km) which occurred near the west coast on Honsu Island, Japan, on March 26, 1963, is studied on the basis of the seismological data. Dynamic and static parameters of the faulting are determined by directly comparing synthetic seismograms with observed seismograms recoreded at seismic near and far distances. The De Hoop-Haskell method is used for the synthesis. The average dislocation is determined to be 60 cm. The overall dislocation velocity is estimated to be 30 cm/sec, the rise time of the slip dislocation being determined as 2 sec. Other fault parameters are determined using supplementary data on the P-wave first motion, the S-wave polarization angle, and the aftershocks. (Author)

AD-A011 073/4GA PC$3.25/MF$2.25
Massachusetts Inst of Tech Cambridge
Seismic Displacement and Ground Motion Near a Fault: The Saitama Earthquake of September 21, 1931,
Katsuyuki Abe. 27 Mar 74, 9p AFOSR-TR-75-0705
Contract F44620-71-C-0049, ARPA Order-1827
Availability: Pub. in Jnl. of Geophysical Research, v79 n29 p4393-4399, 10 Oct 74.

Descriptors: *Earthquakes, Japan, *Ground motion, Seismic waves, Velocity, Dislocations, Faults(Geology), Tectonics, Seismographs, Reprints.
Identifiers: Saitama(Japan).

The dislocation parameters of the Saitama earthquake (M = 7.0, 36.15 N, 139.24 E) of September 21, 1931, are determined on the basis of first-motion data, aftershock area, and close-in seismograms obtained by a low-magnification long-period seismograph. The earthquake represents a left-lateral strike slip faulting on a plane dipping 80 deg toward N 196 deg E with dimensions of 20 km (length) x 10 km (width). The strike of the fault plane is found to be almost parallel to that of the eastern extension of the median tectonic line. A synthetic study suggests that the rupture grows bilaterally at a velocity of 2.3 km/s. The rise time, the final dislocation of the linear ramp dislocation time function, and the particle velocity of the fault dislocation are estimated to be 2 s, 100 cm, and 50 cm/s, respectively. (Author)

AD-A011 074/2GA PC$3.25/MF$2.25
Massachusetts Inst of Tech Cambridge
Tectonic Strain Release by Underground Nuclear Explosions and Its Effect on Seismic Discrimination,
M. Nafi Toksoz, and Harold H. Kehrer. 24 Apr 72, 23p AFOSR-TR-75-0708
Contracts F44620-71-C-0049, F19628-72-C-0094
Availability: Pub. in Geophysical Jnl. of the Royal Astronomical Society, v31 n1-3 p141-161 1972.

Descriptors: *Tectonics, *Underground explosions, *Nuclear explosions, *Seismic waves, Discrimination, Surface waves, Strain(Mechanics), Power spectra, Rock, Geology, Soils, Reprints.

The analysis of surface waves from a large number of underground nuclear explosions reinforces the hypothesis of tectonic strain release. Such strain release is dependent on rock type and ambient stress levels. In harder media, such as granite, strain release is considerably greater than in soft media such as loose alluvium and salt. In the case of three events for which the tectonic component exceeded that of the explosion itself, the effect on the msubs-msubb discriminant due to the added surface wave energy was not noticeable. This was probably due to the averaging of magnitude over all azimuths. A decaying pulse-type source-time function is consistent with surface wave amplitude spectra and can explain the long-period/short-period spectral ratio.

PB-241 943/0GA PC$7.50/MF$2.25
California Inst. of Tech., Pasadena. Earthquake Engineering Research Lab.
Strong Motion Earthquake Accelerograms Digitized and Plotted Data. Volume I. Uncorrected Accelerograms. Part T. Accelerograms IT274 Through IT293,
A. G. Brady, and D. E. Hudson. Jan 75, 228p
EERL-73-25
Grant NSF-GI-28098

Descriptors: *Earthquakes, *Seismic waves, *Dynamic structural analysis, Structures, Buildings, Dynamic response, Accelerometers, Power spectra, Spectrum analysis, Fourier analysis, Digital recording, California.
Identifiers: *Earthquake engineering, *Ground motion, San Fernando earthquake, Imperial Valley earthquake.

The first set of twenty uncorrected digitized earthquake accelerograms was published in July 1969 as Volume I, Part A, of the present series. That volume also contained introductory material and background information describing the methods used, accuracies, etc., which should be referred to by all users of the data. The San Fernando earthquake provided records of sufficient importance that the original plan was interrupted after two parts and Parts C through S contained the San Fernando earthquake accelerograms. This issue contains records from the El Centro, California, site in the basement of the Imperial Valley Ir-

rigation District substation from 1938 to 1966 including nine groups of aftershocks of the May 18, 1940 Imperial Valley earthquake.

8L. Snow, Ice, and Permafrost

AD-A010 645/0GA PC$4.25/MF$2.25
Dubois and King Inc Randolph Vt
Hydrologic Effects of Frozen Ground: Literature Review and Synthesis,
S. Lawrence Dingman. Mar 75, 60p CRREL-SR-218
Contract DACA89-71-C-1441

Descriptors: *Hydrology, *Permafrost, Reviews, Cold regions, Snow cover, Ground water, Soil mechanics, Melting, Freezing, Permeability, Fluid flow, Runoff, Seasonal variations.
Identifiers: *Frozen soils.

The report, intended as a section of a future comprehensive monograph on cold regions hydrology, summarizes existing knowledge of the profound hydrologic effects of frozen ground. The general characteristics of seasonally and perennially frozen ground also are described, and the geographical distribution of frozen ground is discussed.

AD-A011 114/6GA PC$3.75/MF$2.25
Defence Research Establishment Ottawa (Ontario)
Interpretation of SLAR Imagery of Ice in Nares Strait and the Arctic Ocean,
Moira Dunbar. Jan 75, 42p Rept no. DREO-R-712
Summary in French.

Descriptors: *Sea ice, *Arctic Ocean, Aerial reconnaissance, Radar images, Side looking radar, Thickness, Drift, Infrared photography, Canada.
Identifiers: *Nares Strait, *Ice observations, Remote sensing.

SLAR imagery of Nares Strait was obtained on four flights carried out in January, March and August 1973, and April 1974 by Canadian Forces Maritime Proving and Evaluation Unit in an Argus aircraft equipped with a Motorola APS-94D SLAR. The March flight also covered two lines in the Arctic Ocean, from Alert to the pole and from the pole down the 4 degrees E meridian to the ice edge at about 80 degrees N. No observations on the ground were possible, but some back-up was available on all flights from visual observations recorded in the air, and on the March flight from infrared line-scan and vertical photography. The interpretation of ice features from the SLAR imagery is discussed, and the conclusion reached that in spite of certain ambiguities the technique has great potential which will increase with improving resolution.

N75-21775/2GA PC$3.75/MF$2.25
National Aeronautics and Space Administration. Goddard Space Flight Center, Greenbelt, Md.
Microwave Emission from Snow and Glacier Ice.
T. C. Chang, P. Gloersen, T. Schmugge, T. T. Wilheit, and H. J. Zwally. Feb 75, 31p NASA-TM-X-70871, X-910-75-36
Subm-Submitted for Publication.

Descriptors: *Brightness temperature, *Glaciers, *Microwaves, *Snow cover, Dielectric properties, Mie scattering, Radiative heat transfer, Surface temperature.

For abstract, see STAR 1313

PB-242 435/6GA PC$7.00/MF$2.25
Washington Univ., Seattle. Arctic Ice Dynamics Joint Experiment Office.
AIDJEX Bulletin Number 28.
Mar 75, 184p AIDJEX-75-28
Grant NSF-C625
See also report dated Nov 74, PB-238 574.

Descriptors: *Sea ice, *Air water interactions, *Arctic regions, Pack ice, Ocean currents, Drag, Heat transfer, Remote sensing, Ice reporting, Salinity, Oceanographic data, Mathematical models, Synchronous satellites, Arctic Ocean, Spaceborne photography.
Identifiers: AIDJEX program.

The first articles in this bulletin describe some of the projects being undertaken during the 1975-76 AIDJEX main experiment (meteorology, air stress, oceanography, ocean and ice tilt). Other articles discuss progress and problems with the AIDJEX numerical model, data analysis, and the possibility to using geostationary satellites for communication in polar regions.

8M. Soil Mechanics

PB-241 915/8GA PC$5.75/MF$2.25
Texas Univ. at Austin. Center for Highway Research.
Behavior of Three Instrumented Drilled Shafts under Short Term Axial Loading.
Research rept.,
Donald E. Engeling, and Lymon C. Reese. May 74, 133p CFHR-3-5-72-176-3

Descriptors: *Drill holes, *Soil properties, Loads(Forces), Clays, Sands, Soil profiles, Design criteria.
Identifiers: *Axial loads, DOT/4CZ/CY.

This study is concerned with the analysis of the behavior of three full-scale instrumented drilled shafts under axial loading. Two of the shafts were in soil profiles containing sand and clay while the third was entirely in clay. The data from the load tests were correlated with soil properties and the correlations were compared with results from previous research. Based on the test results and a reevaluation of previous tests, some improvements in the design criteria for drilled shafts in clay have been recommended.

PB-241 979/4GA PC$5.25/MF$2.25
Nevada Univ., Reno. Dept. of Soil Science.
Flow and Retention of Water in the Stratified Soils of the Orovada, Nevada, Area.
Master's thesis,
Gary Bruce Muckel. Jun 74, 108p W75-07991, OWRT-A-031-NEV(1)

Descriptors: *Water flow, *Soil water, *Irrigation, Water storage, Soil properties, Motion, Sampling, Plant growth, Field tests, Neutron counters, Theses, Nevada.
Identifiers: *Irrigation water, *Soil water movement, Orovada(Nevada).

Stratified soils of the Orovada area hold more water than predicted by an estimate based on uniform soils. The amount of available water held by three different soils was found. The Rebel-like soil held 21.8% by volume, the Orovada-like soil 23.2%, and the Bloor-like soil 21.4%. These values, determined by field tests, were higher than the available water contents estimated by measurements of each layer made in the laboratory. They demonstrate that the available water retained by a soil is determined by characteristics of the soil that are destroyed during sampling and sample preparation. Measurements of water content at point locations within a soil are needed for determination of unsaturated hydraulic conductivity. The neutron probe does not measure soil water content at point locations but averages it in the probe's sphere of sensitivity. These findings are part of the basic data needed to correctly assess the frequency and dates of irrigation to provide the moisture requirements for alfalfa seed production.

PB-242 042/0GA PC$3.75/MF$2.25
California Univ., Berkeley. Earthquake Engineering Research Center.
Liquefaction of Gravelly Soils Under Cyclic Loading Conditions,
Robert T. Wong, H. Bolton Seed, and Clarence K. Chan. Jun 74, 49p EERC-74-11
Prepared in cooperation with California State Dept. of Water Resources, Sacramento.

Descriptors: *Soils, *Liquefaction, Phase transformations, Cyclic loads, Earthquakes, Gravel, Pore pressure, Axial strain.
Identifiers: *Earthquake engineering, *Soil liquefaction.

The results of cyclic loading tests on gravelly soils using a 12-inch diameter triaxial test apparatus are described. The cyclic stresses required to cause plus or minus 2.5% and plus or minus 10% strain of saturated samples of gravelly soils are shown to be somewhat higher than those causing similar strains in sands. However part of this increase may be due to the effects of membrane penetration and compliance in the test system. It is suggested that the superior field performance of gravelly soils over sands is probably due in large measure to the higher permeability of gravelly soils which will often permit sufficient drainage to occur to prevent the development of high pore water pressures or liquefaction.

PB-242 454/7GA PC$9.25/MF$2.25
National Swedish Inst. for Building Research, Stockholm.
Settlement Characteristics of Preconsolidated Natural Sands,
Rune Dahlberg. 1975, 316p* D1:1975, ISBN-91-540-2410-2
Paper copy also available Svensk Byggtjanst, Box 1403, S-11134 Stockholm, Sweden. 42 Sw.Cr.

Descriptors: *Footings, *Settlement(Structural), *Sands, Soil tests, Preconsolidation pressure, Deformation, Loads(Forces), Bearing capacity, Penetration tests, Test methods, Stresses, Modulus of elasticity, Computer programs, Foundations, Moisture content, Particle size, Test equipment, Sweden.

In the report the settlements of footings on slightly overconsolidated sands loaded beyond the preconsolidation pressure have been investigated. Settlement calculations require a knowledge of the preconsolidaton pressure, and of the modulus of deformation below and above the preconsolidation pressure. Different methods to determine in-situ these parameters have been examined. The investigation was carried out at a test site (16 x 18 m) located close to an esker about 40 km west of Stockholm.

8N. Terrestrial Magnetism

N75-21861/0GA PC$3.75/MF$2.25
Danish Meteorological Inst., Copenhagen.
Rude Skov Geophysical Observatory Magnetic Results, 1971.
1974, 36p ISBN-87-7478-102-2

Descriptors: *Magnetic disturbances, *Tables (Data), Diurnal variations, Magnetic flux.

For abstract, see STAR 1313

9. ELECTRONICS AND ELECTRICAL ENGINEERING

9A. Components

AD-A010 592/4GA PC$3.75/MF$2.25
Massachusetts Inst of Tech Lexington Lincoln Lab
Losses in a Periodically Gapped Cable Armor in Contact with the Surrounding Soil.
Technical note,
Michael L. Burrows. 25 Apr 75, 32p Rept no. TN-1975-21 ESD-75-165
Contract F19628-73-C-0002
Sponsored in part by Naval Electronic Systems Command, Washington, D.C.

Descriptors: *Electric cables, *Underground antennas, Buried objects, Protection, Electrical impedance, Metallic textiles, Numerical analysis.

A variational method is presented for evaluating the effective impedance of the periodically gapped armor on a buried cable. The armor is assumed to be in direct contact with the surrounding soil, so that the gaps, which are intended to break the longitudinal electrical conductivity, are in fact electrically bridged by the soil. From the effective impedance can be calculated the armor losses and, when the cable is used as a buried antenna, the reduction in antenna efficiency. Numerical results are presented graphically, and some corroborating experimental evidence is reported.

AD-A010 631/0GA PC$4.25/MF$2.25
Army Construction Engineering Research Lab Champaign Ill
EMP Evaluation of Junction Boxes, Junction-Box Covers, and Gaskets.
Final rept.,
D. J. Leverenz, R. G. McCormack, and P. H. Nielsen. May 75, 53p Rept no. CERL-TR-C-18

Descriptors: *Junction boxes, *Electromagnetic shielding, Electromagnetic pulses, Radiofrequency interference, Gaskets, Coverings, Radiation hardening.
Identifiers: Evaluation.

This study reports test results from RFI testing of electrical junction boxes with bolt-on covers. A number of cover-gasket configurations were tested. Tests indicate that a large improvement in the shielding effectiveness of junction boxes can be obtained by increasing the number of cover bolts or using a Metex 'combo strip' gasket. A simple field fix that provides a large increase in shielding effectiveness can be made by doubling the number of cover bolts used on the junction boxes.

AD-A010 651/8GA PC$3.25/MF$2.25
Army Electronics Command Fort Monmouth N J
Transient Behavior in Hydrogen Thyratrons.
Technical rept. 1 Jan-31 Dec 74,
Maurice Weiner. May 75, 19p Rept no. ECOM-4317

Descriptors: *Thyratrons, Hydrogen, Transients, Mathematical models.

A model capable of explaining transient behavior in hydrogen thyratrons for applications requiring instant full power operation has been developed. The model assumes that the primary mechanisms responsible for the transient behavior are gas heating and gas clean-up in the grid/anode region. The types of transient behavior predicted by the model include prefiring, trigger instabilities and quenching. The model also provides a basis for design techniques to eliminate such transient behavior.

AD-A010 729/2GA PC$4.75/MF$2.25
Illinois Univ Urbana Coordinated Science Lab
Effect of Processing and Special Compositional Variations on the Microstructural and Electrical Behavior in the Lead Zirconate Titanate System.
Technical rept.,
Dale Edward Wittmer. Apr 75, 83p Rept nos. R-678, UILU-ENG-75-2213
Contract DAAB07-72-C-0259

Descriptors: *Piezoelectric transducers, Surface waves, Ceramic materials, Lead compounds, Zirconates, Titanates, Lanthanum, Fabrication, Coupling circuits, Microstructure, Theses.
Identifiers: *Acoustic surface waves, *Interdigital transducers, *Lead titanates, *Lead zirconates.

Recently lead zirconate titanate compositions (because of their high electro-mechanical coupling and polycrystalline nature) have been employed as substrates for interdigitally poled transducers. A desire was expressed to try to further develop a ceramic which could be readily polished and poled; in addition to exhibiting characteristics which would make it suitable for a (surface acoustic wave) SAW device (more specifically, low power loss over the operating frequency, high coupling, and relatively small grain size). The base composition was selected from the work done by Haertling and Land on the ternary system La-PbZrO2-PbTiO2 to achieve an optimization of dielectric constant, coercive field, planar coupling and remnant polarization.

AD-A010 732/6GA PC$3.75/MF$2.25
Georgia Inst of Tech Atlanta Engineering Experiment Station
Investigation of Techniques for Combining IMPATT Chips.
Final rept. 15 May-30 Sep 74,
N. W. Cox, C. T. Rucker, J. W. Amoss, and G. N. Hill. 31 Jan 75, 37p AFAL-TR-74-329
Contract F33615-74-C-1170

Descriptors: *Impatt diodes, *Heat sinks, *Circuit interconnections, Electrical insulation, Thermal properties, Substrates, Semiconductor junctions, Metallizing, Microwave equipment, Avalanche diodes, X Band, Diamonds.

This report covers initial work on the series electrical interconnection of IMPATT devices heat-sunk in parallel by way of diamond insulating heat sinks. Such chip level power combining is expected to result in higher impedance, efficiency, and power levels from individual diode packages or substrates prior to further power combining at the circuit level. The major problem encountered to date is a pronounced increase in low frequency spurious effects when two or more device chips are connected electrically in series. The long term objective of this work is to develop practical means of combining IMPATT devices at the chip level to increase the maximum power from a single microwave device package.

AD-A010 761/5GA PC$3.25/MF$2.25
Army Electronics Command Fort Monmouth N J
Contrast Enhancement of Light Emitting Diode Displays.
Technical rept.,
Joseph Pucilowski, Robert Schuman, and Joseph Velasquez. 13 Feb 74, 9p Rept no. ECOM-4318
Availability: Pub. in Applied Optics, v13 n10 p2248-2252 Oct 74.

Descriptors: *Light emitting diodes, *Display systems, Brightness, Optical filters, Contrast, Temperature, Band pass filters, Luminescence, Reprints.
Identifiers: Contrast enhancement.

This paper describes a technique for calculating the resultant contrast of displays incorporating various filters or filter combinations. In particular, contrast of such displays employing red or green light emitting diodes (LED's) as the active elements is tabulated. The results indicate that adequate contrast enhancement of red LED's in high light level environments is usually achieved using neutral density or bandpass filters with antireflective coatings. Green LED's must be designed to have a high degree of specular reflectance so that a circular polarizer may be employed in order to achieve similar results. A discussion of required filter bandwidth to accomodate shifts in peak spectral output of LED's due to manufacturer's tolerances and temperature effects is also included. (Author)

AD-A010 782/1GA PC$3.75/MF$2.25
Westinghouse Defense and Electronic Systems Center Baltimore Md Systems Development Div
Hardened Hybrid Semiconductor Packages. Task II.
Final rept. 1 Jan-31 Jan 75,
Frank A. Lindberg. May 75, 27p Rept no. 75-0516 HDL-CR-75-216-1
Contract DAAG39-73-C-0216

Descriptors: *Semiconductor devices, *Radiation hardening, Packaging, Ultrasonic welding, Circuit interconnections, Vapor deposition, Vacuum apparatus.
Identifiers: *Beam lead devices.

The work was performed to develop a radiation hardened packaging technique for packaging a whole round semiconductor wafer. The metal which connected the wafer bonding pads to the package output pins was aluminum which was vapor deposited through a mask on the inside surface of the package. One end of each conductor line was lifted off the package surface to form a beam lead. These beam leads were then ultrasonically bonded to the wafer bonding pads.

AD-A010 915/7GA PC$3.25/MF$2.25
California Inst of Tech Pasadena
Numerical Simulation of Charge Coupled Device Operation, Abbreviated Form.
Rept. no. 2 (Final),
A. M. Mohsen, Y. Daimon, and C. A. Mead. 31 Oct 74, 5p
Contract N00014-67-A-0094-0032

Descriptors: *Charge coupled devices, Mathematical models, Schottky barrier devices, Charge transfer.

The research consisted of a detailed theoretical study of the operation of both surface and buried channel charge coupled devices (CCD). In the case of surface charge coupled devices, the primary results were: the development of the technologically important push clock clocking scheme, the numerical simulation of the operation of two and four phase overlapping gate CCD, the estimation of the importance of interface states in limiting the charge transfer for a number of different clocking schemes, the estimation of the small signal or long time decay of the charge in surface channel CCD. In the case of buried channel CCD (BCCD), the primary results were: the development of detailed one and two dimensional solutions for the electrostatics of overlapping gate BCCCD, and the numerical simulation of the details of the operation of BCCCD. Finally, a new CCD device structure was explored, the Schottky barrier CCD. This new device structure may have potential applications in the manufacture of CCD in materials other than silicon.

CEA-R-4584 PC$5.50/MF$2.25
CEA Centre d'Etudes Nucleaires de Grenoble, 38 (France). Lab. d'Electronique et de Technologie de l'Informatique.

Diffusion Length Measurements of Minority Carriers in Devices.
H. Carme. Feb 75, 49p
In French. U.S. Sales Only.

Descriptors: (*Semiconductor devices, *Diffusion length), Computers, Measuring methods.

For abstract, see NSA 31 12, number 35714.

COO-3449-1 PC$7.75/MF$2.25
RCA Labs., Princeton, N.J.
Transmission Secondary Emission (Tse) Multipliers Using High-Gain Secondary Emitters. Final Report, August 1, 1974--December 31, 1974.
G. H. Olsen, and R. U. Martinelli. Mar 75, 94p
Contract AT(11-1)-3449

Descriptors: (*Electron multipliers, *Dynodes), Diffusion, Gain, Gallium arsenides, Gallium phosphides, Indium phosphides, Interfaces, Sample preparation, Secondary emission.

For abstract, see NSA 31 12, number 35717.

KFK-2052 PC$4.25/MF$2.25
Kernforschungszentrum Karlsruhe (F.R. Germany). Inst. fuer Experimentelle Kernphysik.
Fundamental Aspects for Conductor Arrangements with High and Very Small Inductances and a Technical Realization.
H. Koefler, W. Maurer, G. Noether, and A. Ulbricht. Jan 75, 24p
U.S. Sales Only.

Descriptors: (*Superconducting wires, *Energy storage), Equipment protection devices, Induction, Magnet coils, Solenoids, Specifications, Superconducting cables, Switches, Trigger circuits.

For abstract, see NSA 31 12, number 32951.

KFK-2064 PC$4.75/MF$2.25
Kernforschungszentrum Karlsruhe (F.R. Germany). Inst. fuer Experimentelle Kernphysik.
Current Transformation and Field Screening with Superconducting Coils.
M. Scherer, and P. Turowski. Feb 75, 31p
In German. U.S. Sales Only.

Descriptors: (*Superconducting wires, *Electric currents), Induction, Magnetic fields, Superconducting cables.

For abstract, see NSA 31 12, number 32952.

N75-21522/8GA PC$7.00/MF$2.25
Westinghouse Electric Corp., Lima, Ohio. Aerospace Electrical Div.
Aerospace Technology Development of Three Types of Solid State Remote Power Controllers for 120VDC with Current Ratings of Five, and Thirty Amperes, One Type Having Current Limiting.
Interim Report.
D. E. Baker. Feb 75, 186p NASA-CR-134772, WAED-75-01E
Contract NAS3-17771

Descriptors: *Current regulators, *Power limiters, *Remote control, Circuit breakers, Circuit protection, Limiter circuits, Safety devices, Solid state devices.

For abstract, see STAR 1313

PAT-APPL-517 678/GA PC$3.25/MF$2.25
Energy Research and Development Administration, Washington, D.C.
Reducing Gain Shifts in Photomultiplier Tubes.
Patent Application,
Charles E. Cohn. Filed 24 Oct 74, 10p
Government-owned invention available for licensing. Copy of application available NTIS.

Descriptors: *Photomultiplier tubes, *Patent applications, Scintillation counters, Amplification.
Identifiers: PAT-CL-313-103.

The patent application describes a means for reducing gain shifts in multiplier tubes due to varying event count rates. It includes means for limiting the number of cascaded, active dynodes of the multiplier tube to a predetermined number with the last of predetermined number of dynodes being the output terminal of the tube. This output is applied to an amplifier to make up for the gain sacrificed by not totally using all available active stages of the tube. Further reduction is obtained by illuminating the predetermined number of dynodes with a light source of such intensity that noise appearing at the output dynode associated with the illumination is negligible.

PAT-APPL-519 325/GA PC$3.25/MF$2.25
Energy Research and Development Administration, Washington, D.C.
High-Explosive Driven Crowbar Switch.
Patent Application,
Robert S. Dike, and Ralph W. Kewish, Jr. Filed 30 Oct 74, 11p
Government-owned invention available for licensing. Copy of application available NTIS.

Descriptors: *Patent applications, *Electric switches, Actuators, Explosive charges.
Identifiers: PAT-CL-200-237.

The patent application relates to a compact explosive driven switch for use as a low resistance, low inductance crowbar switch. A high-explosive charge extrudes a deformable conductive metallic plate through a polyethylene insulating layer to achieve a hard current contact with a supportive annular conductor.

PAT-APPL-562 294/GA PC$3.25/MF$2.25
Department of the Navy Washington D C
Injection Locked Josephson Oscillator Systems.
Patent Application,
Filed 26 Mar 75, 18p Rept no.
Government-owned invention available for licensing. Copy of application available NTIS.

Descriptors: *Microwave oscillators, Patents, Josephson junctions, Injection, Extremely high frequency, Phase locked systems.
Identifiers: *Patent applications.

The patent application describes various injection locking arrangements employing Josephson oscillators for achieving signal amplification, frequency conversion and the detection of extremely low level signals at high frequency ranges.

PAT-APPL-566 495/GA PC$3.25/MF$2.25
National Aeronautics and Space Administration. Marshall Space Flight Center, Huntsville, Ala.
Frequency Modulated Oscillator.
Patent Application.
M. A. Honnell. Filed 9 Apr 75, 11p NASA-CASE-MFS-23181-1
Subm-Sponsored by NASA.
Government-owned invention available for licensing. Copy of application available NTIS.

Descriptors: *Frequency modulation, *Oscillators, *Push-pull amplifiers, Nonlinearity, *Patent applications, Varactor diodes.

Devices for frequency modulation of radio frequency oscillators are described. In particular, a description is given of a frequency modulated push-pull oscillator in which the nonlinear characteristics of varactors producing frequency modulation is compensated for by an opposite nonlinear characteristic of a field effect transistor providing bias to the varactors.

PATENT-3 859 615 Not available NTIS
Atomic Energy Commission, Washington, D.C.
Torus Windings Having Asymmetric Magnet Coils.
Patent,
James N. Luton, Jr., Wilhelm F. Gauster, and Robert L. Brown. Filed 30 Jul 73, patented 7 Jan 75, 5p PAT-APPL-383 858
Government-owned invention available for licensing. Copy of patent available Commissioner of Patents, Washington, D.C. 20231 $0.50.

Descriptors: *Electric coils, *Patents, Toroids, Magnet coils, Design.
Identifiers: PAT-CL-336-225.

The patent describes new coil designs which provide coil shapes that permit construction of the individual magnet coils with an appreciable reduction of power while permitting adequate access between the coils of the torus.

PATENT-3 860 890 Not available NTIS
Atomic Energy Commission, Washington, D.C.
Temperature Stable RC Oscillator.
Patent,
Ronald G. Husa. Filed 2 Jan 74, patented 14 Jan 75, 4p PAT-APPL-430 312
Government-owned invention available for licensing. Copy of patent available Commissioner of Patents, Washington, D.C. 20231 $0.50.

Descriptors: *Oscillators, *Patents, Thermal stability, Resistors, Capacitors, Transistors.
Identifiers: PAT-CL-331-111.

The patent describes a temperature stable, free running oscillator. It includes first and second transistors with the collector of the first transistor connected directly to the base of the second transistor, and the base of the first transistor coupled through a capacitor to the collector of the second transistor and through a resistor to the emitter of the second transistor; resistors connected between the collectors of the transistors to a voltage bias; and resistors connected between the emitters of the transistors to ground. A buffer amplifier may be connected to the emitter of the second transistor to provide a uniform, square wave output signal.

UCRL-Trans-10824 PC$4.00/MF$2.25
Gesellschaft fuer Schwerionenforschung m.b.H., Darmstadt (F.R. Germany).
High-Capacity Targets in X-Ray Tubes.
H. G. Haubold. 1975, 15p
Translated from GSI--73-7.

Descriptors: (*X-ray tubes, *Targets), (*Copper, *Specific heat), Activation analysis, Chemistry, Electron beams, Gases, Helium, Isotope separation, Separation processes, Solids, Thermal conductivity.

For abstract, see NSA 31 12, number 35724.

9B. Computers

AD-A010 590/8GA PC$3.75/MF$2.25
Mitre Corp Mclean Va
Design of a Secure File Management System,
J. C. C. White. Apr 75, 31p Rept no. MTR-2931
ESD-TR-75-57
Contract F19628-73-C-0001

Descriptors: *Data processing security, *Data storage systems, Memory devices, Protection.

Identifiers: PDP-11/45 computers, *Computer privacy, *Computer information security, *File management systems.

A file management/operating system based on the PDP-11/45 Security Kernel is described. The system will allow complete sharing of files, subject to the control of the Security Kernel, so that problems brought about by the conflicting requirements for security and sharing can be identified and explored. It will provide a vehicle for experimentation with the extensions of the kernel required for multisource information correlation.

AD-A010 591/6GA PC$4.75/MF$2.25
Mitre Corp Mclean Va
Parallel Derivatives for Multiprocessor Task Scheduling,
J. K. Millen. May 75, 93p Rept no. MTR-2922
ESD-TR-75-61
Contract F19628-75-C-0001

Descriptors: *Multiprocessors, *Parallel processing, *Scheduling, Flow charting, Network flows, Compilers, Computer programming, Queueing theory.

Three alternatives are presented for the design of a scheduler for a multi-miniprocessor system. The alternatives are based in general on the theory of parallel program schemata and in particular on a new parallel derivative technique for constructing the maximally parallel flowchart equivalent to a given one.

AD-A010 625/2GA PC$5.75/MF$2.25
Syracuse Univ N Y
Design and Evaluation of an Arithmetic Unit.
Interim rept. Jan 72-Dec 73,
Tse-yun Feng, and Chung-ping Hsu. Mar 75, 136p RADC-TR-75-86
Contract F30602-72-C-0281

Descriptors: *Arithmetic units, *Parallel processors, *Associative processing, Logic devices, Algorithms.
Identifiers: *Logic design, Floating point operation.

Iterative array logic and several existing arrays for arithmetic operations are first reviewed. Then, for a large scale general purpose associative processor a modularized arithmetic unit is proposed and studied. The proposed arithmetic unit has the flexibility to perform arithmetic operations with any multiple of four bits being processed in parallel. While reducing the total number of words that can be processed simultaneously by a corresponding factor, the per-word execution time is decreased proportionally. This design will partially solve the problem of inefficient utilization of hardware facilities, especially arithmetic unit, for smaller applications. Algorithms are flowcharted and illustrated for full-length parallel and four-bit parallel arithmetic operations, which exemplify various parallel arithmetic operations. Finally, a comparison study is provided concerning full-length parallel and m-bit parallel operations for various m, which is a multiple of 4 and less than the operand length.

AD-A010 637/7GA PC$4.25/MF$2.25
New Mexico Univ Albuquerque Eric H Wang Civil Engineering Research Facility
Method of Transfer Function Calculation and Distorted Data Correction.
Final rept. Nov 71-Apr 73,
George L. Schulz. Mar 75, 53p AFWL-TR-73-300
Contract F29601-72-C-0024
Sponsored in part by Defense Nuclear Agency, Washington, D.C.

Descriptors: *Data processing, *Fourier transformation, Data acquisition, Transfer functions, Computer programs.
Identifiers: *Fast Fourier transform, Discrete Fourier transform.

An effort was made to improve data records by compensating for the dynamic behavior of the data measuring and recording component or system. In the method developed, the fast Fourier transform algorithm is used to calculate the transfer function of the measuring component or system and then the transfer function is used to reconstruct the input data from the output of that component or system. Four sample problems were processed using this approach. In each case, this reconstruction process produced a record which was a much more accurate representation of the input than was the original output of the component.

AD-A010 658/3GA PC$3.75/MF$2.25
IBM Federal Systems Div Gaithersburg Md
Program Documentation for the 1827 Data Control Unit Input/Output Subroutines,
W. E. Brandt. May 70, 43p AMRL-TR-70-151, AMRL-HESS-70-5
Contract F33615-69-C-1901

Descriptors: *Computer programming, Analog to digital converters, Input output processing, Man machine systems, Subroutines, FORTRAN.
Identifiers: IBM 360/40 computers, IBM 1827 system.

The 1827 Data Control Unit input/output subroutines, ANALOG, DIGIN, and DIGOUT were written for the Human Engineering Division, Aerospace Medical Research Laboratory (AMRL). These subroutines have been incorporated into the Human Engineering Systems Simulation (HESS) facility to provide a convenient means for the Fortran programmer to perform input and output functions using the 1827 Data Control Unit (DCU). The IBM 1827 Data Control Unit, controlled by the IBM System/360 Model 40, transfers analog and digital data between customer devices and the computer.

AD-A010 671/6GA PC$3.25/MF$2.25
Fleet Operations Control Center Pacific Fleet Fpo San Francisco 96617
User's Guide to the 160A and 1604A Utility Programs. Change 2.
23 May 75, 13p Rept no. FOCCPAC-TN-12-Change 2
Change 2 to report dated 10 Jan 73, AD-754 123. See also Change 1 dated 28 Aug 74, AD-785 836.

Descriptors: *Computer programming, Instruction manuals.
Identifiers: Utility routines.

AD-A010 720/1GA PC$3.75/MF$2.25
Illinois Univ Urbana Coordinated Science Lab
Restructuring of Arithmetic Expressions for Parallel Evaluation.
Technical rept.,
David E. Muller, and Franco P. Preparata. Apr 75, 33p Rept nos. R-676, UILU-ENG-75-2211
Contract DAAB07-72-C-0259

Descriptors: *Computer applications, *Computations, *Arithmetic, Addition, Parallel processing, Theorems.
Identifiers: Subtraction, Mulitplication.

Let E be an arithmetic expression involving n variables, each of which appears just once, and the possible operations of addition, multiplication and division. Although other cases are considered, when these three operations take unit time the restructuring algorithms presented in this paper yield evaluation times no greater than 2.88 log(base 2) n + 1 and 2.08 log(base 2) n for general and division-free expressions, respectively.

AD-A010 818/3GA PC$3.75/MF$2.25
Naval Research Lab Washington D C
The MUDD Report: A Case Study of Navy Software Development Practices.
Interim rept.,
David M. Weiss. 21 May 75, 33p Rept no. NRL-7909

Descriptors: *Computer programming, Naval research, Military intelligence, Information retrieval, Compilers, Interfaces.
Identifiers: MUDD system, Development.

The MUDD report is a study of Navy software-development practices which is based on a series of interviews with those responsible for the development of Navy systems. The study chronicles the development of a fictional system with requirements typical of Navy tactical systems currently operational or under development. A history of the decisions made during the development of the system is first given. Following the history is an analysis of the impact of each decision on the software developed for the system and on the life-cycle of the software. Finally a set of recommendations for avoiding the pitfalls described in the report is given. The recommendations are designed to assist Navy program managers responsible for software development.

AD-A010 916/5GA PC$3.25/MF$2.25
Massachusetts Inst of Tech Cambridge Artificial Intelligence Lab
U.T.,
Donald E. Eastlake. Apr 74, 11p Rept no. AI-M-292
Contract N00014-70-A-0362-0003
Sponsored in part by Advanced Research Projects Agency, Arlington, Va.

Descriptors: *Time sharing, Message processing, Data processing terminals.
Identifiers: *Computer networks, UT computer program, ARPA computer network, ITS system.

UT is a user telnet program designed to run under the ITS time-sharing system. It implements the relatively recent ARPA network negotiating protocol for telnet connections.

AD-A010 918/1GA PC$9.25/MF$2.25
Massachusetts Inst of Tech Cambridge Project Mac
A Parallel Asynchronous Computer Architecture for Data Flow Programs,
James E. Rumbaugh. May 75, 316p Rept no. MAC-TR-150
Contract N00014-70-A-0362-0006

Descriptors: *Parallel processors, Asynchronous systems, Programming languages, Theses.
Identifiers: MAC project, Asynchronous computers, Design.

This thesis involves the design of a parallel programming language and a parallel processor computer that runs programs expressed in that language. Data flow instructions have no side-effects; therefore unrelated instructions can be executed concurrently without interference if each has its required operands. Data flow procedures define functions from argument values to result values. The Data Flow Machine is hierarchically constructed as a network of simple modules. The behavior of the machine is specified by a formal description language.

AD-A010 928/0GA PC$3.75/MF$2.25
Federal Cobol Compiler Testing Service Washington D C
HIS 6000 COBOL 2.0/H-EIS*23.
Final validation summary rept.
12 Jun 75, 47p Rept no. VSR-75.C001

Descriptors: *Compilers, Programming languages, Validation, Specifications, Standards.

Identifiers: *COBOL, Federal information processing standards.

This Validation Summary Report (VSR) provides a consolidated summary of the results obtained from the validation of the subject compiler. The VSR is made up of several sections showing the discrepancies found. These include an overview of the validation which lists all categories of discrepancies by Federal level module; a section relating the categories of discrepancies to each of the Federal levels of the language; and a detailed listing of discrepancies together with the tests which were failed.

AD-A010 931/4GA Not available NTIS
Rand Corp Santa Monica Calif
Pattern Discrimination Based on an Exponential Error Criterion,
Joel Steven Zucker. Feb 75, 109p Rept no. P-5378
Availability: Paper copy available from RAND Corp., Santa Monica, Calif. PC $7.00.

Descriptors: *Pattern recognition, Discriminate analysis, Bayes theorem, Probability density functions, Waveforms, Speech recognition, Electrocardiography, Theorems.
Identifiers: *Discriminant functions.

This paper introduces a new error criterion for use in the determination of discriminant functions for pattern recognition. The criterion, which is based on an exponential weighting of discriminant function values, combines the ability to assure the error-free classification of separable training patterns with the desirable extrapolative performance usually associated with classifiers based on the pattern statistics.

AD-A010 944/7GA PC$3.75/MF$2.25
Rand Corp Santa Monica Calif
Computer Systems Technology Forecast,
Rein Turn. Jan 75, 31p Rept no. P-5344

Descriptors: *Computer applications, Avionics, Aerospace systems, Ground stations, Logic circuits, Switching circuits, Field effect transistors, Multiprocessors, Integrated circuits, Airborne, Reliability(Electronics), Random access computer storage, Microcomputers, Forecasting.
Identifiers: Fourth generation components, Technology innovation, Large scale integrated circuits.

A forecast of hardware characteristics of ground based and, in particular, aerospace computer systems the 1980s is presented. It is expected that steady advances in the manufacture of large-scale integrated (LSI) logic circuit and memory arrays will lead to at least one order of magnitude improvement in performance characteristics of processors and memories, and will permit similar improvements in size, weight, reliability, and cost. The present advances in the LSI technology are driven largely by the competitive commercial markets. The market for extremely reliable, ruggedized LSI devices for aerospace and other military applications is much smaller and, correspondingly, their development must be supported by the user agencies.

AD-A010 965/2GA PC$3.25/MF$2.25
Rand Corp Santa Monica Calif
Computer Privacy and Computer Security,
Willis H. Ware. Oct 74, 8p Rept no. P-5354

Descriptors: *Data processing security, *Information systems, Legislation, Laws(Science).
Identifiers: *Computer privacy, *Computer information security, Personal privacy.

The following topics are discussed: The privacy trade-off; Technical vs. legal problems; Legislating the issue; A limit to laws.

AD-A010 969/4GA PC$3.75/MF$2.25
Rand Corp Santa Monica Calif
Security Test and Evaluation Tools: An Approach to Operating System Security Analysis,
Dennis Hollingworth, Steve Glaseman, and Marsha Hopwood. Sep 74, 30p Rept no. P-5298

Descriptors: *Data processing security, Computer programming, Military equipment, Test methods.
Identifiers: Computer information security.

As a result of studies of the security characteristics of selected large operating systems, it has become increasingly evident that any complex operating system requires testing and evaluation in order to validate the functional characteristics of the system and verify claims of improved security safeguards. Furthermore, over the next decade, it is likely that new systems will be subject to continuous testing and evaluation in much the same fashion, and for the same purposes, as are existing systems. As yet, the techniques employed in determining the security characteristics of system software are presently quite primitive, based primarily upon the notion of penetration testing - manually examining system source materials for security vulnerabilities. This suggests the development and refinement of tools and techniques of operating system security analysis. Some of the more desirable characteristics of such tools are explored in this document, and several example tools are described.

AD-A010 989/2GA PC$4.25/MF$2.25
Wisconsin Univ Madison Mathematics Research Center
Implementing a Nonstandard Data Type.
Technical summary rept.,
J. M. Yohe. Apr 75, 62p Rept no. MRC-TSR-1545
Contract DA-31-124-ARO(D)-462

Descriptors: *Programming languages, *Computations, Approximation(Mathematics), Arithmetic, FORTRAN.
Identifiers: *Interval arithmetic.

The design of a software package for manipulation of a nonstandard data type is discussed, starting with determination of the mathematical properties of the abstract mathematical system to be approximated, and progressing through the theoretical properties of the approximation, the interfacing of the package with existing languages and language processors, and the internal structure of the package. The principles are illustrated by applying them to the design of an interval arithmetic package to be used with FORTRAN. The thrust of the paper is primarily tutorial.

AD-A011 030/4GA Not available NTIS
Rand Computation Center Santa Monica Calif
A RAND Computation Center Reference: A Root-Finding Program for JOSS,
J. E. Ballinger. Oct 74, 11p Rept no. R-1550/9
Availability: Paper copy available from RAND Corporation, 1700 Main Street, Santa Monica, Calif. 90406, PC$1.50.

Descriptors: *Polynomials, *Computer programs, Complex variables, Approximation(Mathematics), Numerical analysis.
Identifiers: *Roots of equations, JOSS computer systems.

The purpose of this document is to present a JOSS program that will find all roots, real and complex, of an nth degree polynomial with real coefficients.

AD-A011 039/5GA PC$3.75/MF$2.25
Naval Ship Research and Development Center Bethesda Md

CSKYDG2: An Out-of-Core Choleksy Algorithm Equation Solver (With Respect to Profile) for Large Positive Definite Systems of Linear Equations,
Donald A. Gignac. Mar 75, 37p Rept no. NSRDC-4655

Descriptors: *Matrices(Mathematics), *Computer programs, Linear algebraic equations, Numerical analysis, FORTRAN, Structural properties.
Identifiers: CSKYDG2 computer program, Cholesky algorithm, CDC 6600 computers.

In the finite element approach to static structural analysis the solution of the equation KU = P is basic. However, the order of K is often so large that, even when the symmetry and banded structure of K are taken into account the storage of K in the core memory of a computer may not be feasible or even possible. To handle such a case, the computer program CSKYDG2 has been developed. CSKYDG2 is an out-of-core Cholesky algorithm solver for positive definite systems of simultaneous linear equations. CSKYDG2, which takes the profile approach, uses SETUP, a preprocessor program which stores the profile of the upper triangular half of the matrix K in random access files. CSKYDG2 and SETUP are written in FORTRAN Extended for the CDC 6000 series of computers.

AD-A011 060/1GA PC$3.25/MF$2.25
Texas Univ At Austin Electronics Research Center
Marker Automata,
P. Hsia, and R. Yeh. 2 Jul 73, 20p AFOSR-TR-75-0756
Contract F44620-71-C-0091, Grant NSF-GJ-31528
Availability: Pub. in Information Sciences, 8 P71-88 1975.

Descriptors: *Markers, *Automata, Information sciences, Computer applications, Input, Programming languages, Augmentation, Reprints.

This paper deals with finite automata augmented with markers which the automata can move about on their input tapes. The concept of augmenting markers to automata was first introduced by Blum and Hewitt in two-dimensional automata. Kreider, Ritchie, and Springsteel investigated recognition of context-free languages by (one-dimensional) automata with markers. In this paper, we investigate some fundamental properties of marker automata and study their relationships to other types of automata and languages. The main result in this paper is the establishment of an infinite hierarchy of languages recognizable by deterministic and deterministic, halting marker automata. It also turns out that, because of the equivalence of finite marker automata and multi-head automata, the study of three-marker automata becomes very interesting due to results of Hartmanis and Savitch.

AD-A011 061/9GA PC$3.25/MF$2.25
Texas Univ At Austin Electronics Research Center
Polarity-Dependent Memory Switching in Devices with SnSe and SnSe2 Crystals,
Dongwoo Chun, R. M. Walser, R. W. Bene, and T. H. Courtney. 4 Feb 74, 4p AFOSR-TR-75-0722
Contract F44620-71-C-0091
Availability: Pub. in Applied Physics Letters, v24 n10 p479-481, 15 May 74.

Descriptors: *Memory devices, *Tin alloys, *Crystals, *Switching, Selenides, Polarity, Reprints.
Identifiers: Tin selenides.

Polarity-dependent memory switching has been observed in devices of crystalline SnSe and SnSe2 with aluminum contacts. Two types

of low-level switching (1 V/1 mA) with reversed polarity dependence can be obtained in suitably formed devices of either material. In addition, a high-level (100 V/10 mA) polarized memory switching can be obtained in either device. The low-level switching appears to involve an electronic process, while the high-level switching is associated with an electrothermally driven mass transport. (Author)

AD-A011 107/0GA PC$4.25/MF$2.25
Harvard Univ Cambridge Mass Aiken Computation Lab
FORTRAN Implementations of Marching Algorithms.
Technical rept. Sep 74-May 75,
Randolph E. Bank. 27 May 75, 72p Rept no. TR-17-75
Contract N00014-75-C-0243

Descriptors: *Boundary value problems, *Partial differential equations, *Computer programs, Matrices(Mathematics), Finite difference theory, Numerical integration, Computations, Algorithms, FORTRAN.
Identifiers: *Marching algorithms, *Elliptic differential equations.

FORTRAN implementations are given for several marching algorithms for solving the block tridiagonal linear systems which arise from standard 5-point difference approximations to elliptic boundary value problems in two dimensions.

CERN-74-23 PC$25.25/MF$2.25
European Organization for Nuclear Research, Geneva (Switzerland).
Proceedings of the 1974 Cern School of Computing, Godoeysund, Norway, 11--24 August 1974.
15 Nov 74, 444p
U.S. Sales Only.

Descriptors: (*Computers, *Lectures), Cern, Computer codes, Meetings, Programming.

For abstract, see NSA 31 12, number 35653.

NTIS/PS-75/485/3GA
PC$25.00/MF$25.00
National Technical Information Service, Springfield, Va.
The Use of Computers in Solving Mathematical Problems (A Bibliography with Abstracts).
Rept. for Jun 71-Jun 75,
David W. Grooms. Jun 75, 236p*
Supersedes COM-74-11454.

Descriptors: *Bibliographies, *Theory of equations, *Differential equations, *Computer programming, Matrices(Mathematics), Partial differential equations, Statistical analysis, Computation, Boundary value problems, Mathematical programming, Integral equations, Algorithms.
Identifiers: Stiff differential equations, Sparse matrices.

Research is presented on the computer solution of algebraic and differential equations. The necessary software and hardware for implementation is included. Solutions to large sparse matrices, stiff differential equations, and statistical problems are also included. Some of the research is directly applicable to the various physical sciences. (Contains 231 abstracts).

NTIS/PS-75/486/1GA
PC$25.00/MF$25.00
National Technical Information Service, Springfield, Va.
Computer Software Reliability (A Bibliography with Abstracts).
Rept. for 1970-Jun 75,
David W. Grooms. Jun 75, 103p*

Descriptors: *Bibliographies, *Computer programming, Reliability, Compilers, Programming languages, Logic design, Quality assurance, Tests.
Identifiers: *Computer program reliability, *Computer program verification, Structured programming.

The cited research includes computer software reliability modeling, software verification, and the evaluation of test tools for the measurement of software correctness. General discussions are included along with the possibility of using hardware reliability models for testing software. (Contains 98 abstracts).

NTIS/PS-75/501/7GA
PC$25.00/MF$25.00
National Technical Information Service, Springfield, Va.
Structured Programming (A Bibliography with Abstracts).
Rept. for 1964-Jun 75,
David W. Grooms. Jun 75, 56p*

Descriptors: *Bibliographies, *Computer programming, Programming languages, Specifications, Compilers, Operating systems(Computers), Semantics, Computation.
Identifiers: *Structured programming.

N75-21952/7GA PC$7.25/MF$2.25
Kanner (Leo) Associates, Redwood City, Calif.
Conference of the Information Processing Section of Interkosmos (Collection of Reports).
H. Pfau. Apr 75, 222p NASA-TT-F-16164
Contract NASW-2481
Tran-Transl. Into English of the Book "Soveshchaniye Sektsii Obrabotka Informatsii (Sbornik Dokladov) Interkosmos" Acad. Of Sci., Ger. Democratic Rep., 1974 322 p. Conf-Conf. Held at Moscow, 26 Mar. - 4 Apr. 1973.

Descriptors: *Conferences, *Data processing, *Data transmission, *Intercosmos satellites, *Telemetry, Computer storage devices, Data reduction, Data smoothing, Display devices, Satellite observation.

For abstract, see STAR 1313

N75-21980/8GA PC$6.25/MF$2.25
Lockheed Electronics Co., Houston, Tex. Aerospace Systems Div.
Detailed Requirements Document for the Problem Reporting Data System (Pds).
R. S. West. Feb 75, 151p NASA-CR-141730, LEC-5549
Contract NAS9-12200

Descriptors: *Batch processing, *Data systems, *Operational problems, *Space shuttles, Computer programs, Computer systems design, Management information systems, Performance tests.

For abstract, see STAR 1313

N75-21981/6GA PC$3.75/MF$2.25
International Business Machines Corp., Huntsville, Ala. Federal Systems Div.
Main Memory Unit.
Final Report, Oct. 1973 - Apr. 1975.
15 Apr 75, 31p NASA-CR-120733, IBM-75W-000
Contract NAS8-30460

Descriptors: *Computer storage devices, *Core storage, *Hybrid computers, Experimental design, Large scale integration, Performance tests, Product development.

For abstract, see STAR 1313

N75-21989/9GA PC$4.25/MF$2.25
Lockheed Electronics Co., Houston, Tex. Aerospace Systems Div.
Evaluation of a Data Dictionary System.
W. G. Driggers. Mar 75, 53p NASA-CR-141763, LEC-5687
Contract NAS9-12200

Descriptors: *Computer systems programs, *Data systems, *Dictionaries, *Information dissemination, Computer programs, Computer techniques, Data storage, Programming languages.

For abstract, see STAR 1313

N75-22029/3GA PC$5.75/MF$2.25
Behavioral Technology Consultants, Silver Spring, Md.
Statistical Evaluation of Time Series Analysis Techniques. Volume 2: Appendices.
Final Report.
Jun 73, 126p NASA-CR-134012
Contract NAS9-12902

Descriptors: *Computer programs, *Input/output routines, *Multivariate statistical analysis, *Spectrum analysis, Fast fourier transformations, Monte carlo method, Nasa programs, Numerical analysis.

For abstract, see STAR 1313

ORNL-RSIC-38(Vol.2)
PC$9.50/MF$2.25
Oak Ridge National Lab., Tenn.
Techniques for Efficient Monte Carlo Simulation. Volume II. Random Number Generation for Selected Probability Distributions.
E. J. McGrath, and D. C. Irving. Apr 75, 130p
SAI-72-590-LJ
Contract W-7405-eng-26

Descriptors: Algorithms, Computer calculations, Computer codes, Flowsheets, Fortran, Monte carlo method, Probability, Randomness, Simulation.

For abstract, see NSA 31 12, number 35663.

PAT-APPL-548 300/GA
PC$3.75/MF$2.25
Department of the Navy Washington D C
Apparatus for the Generation of a Two-Dimensional Discrete Fourier Transform.
Patent Application,
Jeffrey M. Speiser. Filed 10 Feb 75, 48p Rept no.

Government-owned invention available for licensing. Copy of application available NTIS.

Descriptors: *Television equipment, *Image processing, Fourier transformation, Charge coupled devices, Modems, Digital filters.
Identifiers: *Discrete Fourier transform, PAT-CL-340-179, *Patent applications.

Many problems of image processing and other processing of two-dimensional data require the rapid generation of two-dimensional Fourier transforms in a form suitable for subsequent electronic processing or utilization. This patent application relates to apparatus which performs realtime image processing and which may be implemented with small, light-weight, special-purpose hardware.

PB-242 002/4GA PC$4.75/MF$2.25
Transportation Systems Center, Cambridge, Mass.
Automatic Extraction of Highway Traffic Data from Aerial Photographs.
Final rept. Jul 70-Jun 74,
Juris G. Raudseps. Apr 75, 78p DOT-TSC-FHWA-75-1

Descriptors: *Aerial photography, *Vehicular traffic, *Data processing equipment, Traffic flow, Film readers, Computer systems hardware, Computer systems software, Algorithms.
Identifiers: Feature extraction, *Image processing, DOT/4IZ/IA, Flying spot scanners.

The design of a system for scanning sequences of aerial photographs with a computer-controlled flying-spot scanner and automatically measuring vehicle locations is described. Hardware and software requirements for an operational system of this type are enumerated. Measurement accuracy is predicted to be comparable to that achieved with manual methods in high-volume applications. The cost of such a system is estimated to exceed $500,000. Efficient operation is shown to be critically dependent on the development of an algorithm for predicting vehicle positions that is significantly better than that now available.

PB-242 055/2GA PC$5.75/MF$2.25
Virginia Polytechnic Inst. and State Univ., Blacksburg. Dept. of Engineering Science and Mechanics.
A Microprocessor-Based System for Laboratory Data Acquisition,
George H. Wilson, III, and Carl T. Herakovich.
May 75, 147p* VPI-E-75-11
Grant NGR-47-004-129

Descriptors: *Data processing, *Data acquisition, *Laboratories, Integrated circuits, Computer storage devices, Schematic diagrams, Cathode ray tube screens, Logic circuits, Computer programming, Theses.
Identifiers: *Microprocessors, *IBM 370 computers, Computer applications, *Microcomputers.

The design and use of a microprocessor-based system for laboratory data acquisition is discussed in depth. During a test data is logged by the system and stored on a digital cassette. When the test is complete, the data may be read from the cassette and transmitted over standard telephone lines to an IBM 370 computer for analysis. Complete documentation for the system is provided, including: electrical schematics, a listing of the microprocessor's program, extensive logic flowcharts, and use of the system. Application of the system for processing of load, strain, and acoustic emission data from the simple tension test of a boron-epoxy advanced composite is discussed. The intelligence of the microprocessor is used to provide a reliable, easy to use system which saves time and reduces the errors associated with manual handling of experimental data.

RL-74-143 PC$4.75/MF$2.25
Science Research Council, Chilton (UK). Rutherford Lab.
Computing and Automation Division Quarterly Report, 1 July 1974--29 September 1974.
W. Walkinshaw, and A. T. Lea. Nov 74, 32p
U.S. Sales Only.

Descriptors: (*Computers, *Research programs), Automation.

For abstract, see NSA 31 12, number 35664.

SAND-75-5271 PC$4.00/MF$2.25
Sandia Labs., Albuquerque, N.Mex.
Opsnap: An Optimizing S-Parameter Network Analysis Program.
17p CONF-750328-1

Descriptors: (*Electronic circuits, *Computer calculations), Algorithms, Computers, Microwave equipment, Microwave radiation, Optimization, Programming, Systems analysis, Topology.

For abstract, see NSA 31 12, number 35666.

9C. Electrical and Electronic Engineering

AD-A010 801/9GA PC$4.75/MF$2.25
Oak Ridge National Lab Tenn
Power System EMP Protection.
Final rept.,
James H. Marable, Paul R. Barnes, and David B. Nelson. Mar 75, 76p Rept no. ORNL-4958
Contract W-7405-eng-26

Descriptors: *Electric power, *Transmission lines, Transient radiation effects, Electromagnetic pulses, Nuclear explosions, Transients, Voltage, Protection, Surges, Suppressors, Civil defense.
Identifiers: *Power lines.

The report contains a parametric study of EMP (Electromagnetic Pulse) power line surges and discusses protective measures to minimize their effects. Since EMP surges have considerably greater rates of rise than lightning surges, recommended standards and test procedures are given to assure that surge arresters protect equipment from damage by EMP. Expected disturbances and damage to power systems are reviewed, and actions are presented which distribution companies can take to counter them. These include backup communications methods, stockpiling of vulnerable parts, repair procedures, and dispatcher actions to prevent blackout from EMP-caused instabilities. A long-range program is presented for improving distributors' protection against EMP. This involves employee training, hardware protection for power and control circuits, and improvement of plans for emergency action.

AD-A011 063/5GA PC$3.25/MF$2.25
Texas Univ At Austin Dept of Electrical Engineering
The Effect of Thermal Boundary Conditions on Cylindrical Thermal Switching Devices,
R. Davis, R. Walser, and R. Bene. 19 Feb 74, 7p
AFOSR-TR-75-0733
Contract F44620-71-C-0091
Summary in German.
Availability: Pub. in Physica Status Solid (a), v23 p117-122 1974.

Descriptors: *Thermal switches, Electrical properties, Thermal boundary layer, Cooling, Heat flux, Ferrites, Electric current, Voltage, Numerical analysis, Reprints.

Thermal boundary conditions influencing the electrical behavior of ferrite thermal-switching devices are determined by comparing experimental results with cylindrical model calculations. The results show that in these devices, radial heat flux in the pre-threshold region is controlled by radiation boundary cooling, but that the post-threshold flux is governed by current channelling (filament formation) and leads to a source-limited flow condition. The results serve to emphasize the importance of using realistic boundary conditions in the analysis of thermal switching devices. (Author)

AD-A011 113/8GA Not available NTIS
Army Electronics Command Fort Monmouth N J
Proceedings of the Annual Frequency Control Symposium (28th) Held at Howard Johnson's Motor Lodge, Atlantic City, New Jersey, on 29-31 May 1974,
Hans K. Ziegler, and Hugh F. Foster, Jr. 1974, 424p
See also report dated 1973. AD-771 042.
Availability: Paper copy available from Electronic Industries Association, 2001 Eye Street, N.W., Washington, D.C. 20006, $7.50.

Descriptors: *Frequency, *Meetings, Control, Quartz resonators, Quartz, Crystal oscillators, Crystal filters, Resonators, Frequency standards, Stability, Acoustic equipment, Surface waves, Acoustic waves, Time standards, Oscillators, Materials, Processing.
Identifiers: *Frequency control, Acoustic surface waves.

Contents:
Nonlinear phenomena in quartz crystals;
Crystal resonators for filters and oscillators;
Material properties and processing techniques;
Frequency stability and its measurements;
Crystal oscillators;
Surface acoustic wave devices;
Atomic and molecular frequency standards;
Standard frequency and time distribution.

AD-916 533/3GA PC$4.25/MF$2.25
Aeronautical Systems Div., Wright-Patterson, AFB, Ohio.
Aircraft Avionics (Digital Avionics Study). Volume IV. Appendix C. Cost Trade Analysis.
Technical rept.,
Boris E. Bright. Apr 73, 62p ASD-TR-73-18-Vol-4-App-C
See also AD-912 998. Distribution Limitation now Removed.

Descriptors: *Avionics, *Cost analysis, *Life cycles, Cost effectiveness, Digital systems, Aircraft equipment, Life tests, Logistics, Failure(Electronics), Reliability(Electronics), Maintenance, Trade off analysis.

Current USAF avionics acquisition practices breed 'black box' proliferation with all its attendant high costs, low reliability, and heavy O and M burden. This is happening while digital technology threatens to inundate the service logistic channels. Enough technology is in hand to create prototype 'digital avionics'. Software turns out to be the single most deficient technical area. The board concludes that properly exercised avionics general systems engineering (GSE) can cause the much needed turn about in this avionics situation. The board has identified practices and facilities needed to adequately conduct avionics GSE (volume I). Volume IV is a treatise on cost trade analysis. This volume indicates the importance of life costing (LCC) and the considerations that must be given if cost-effective avionics are to become a reality.

N75-21517/8GA PC$3.25/MF$2.25
Sydney Univ. (Australia). Dept. of Aeronautical Engineering.
An Accurate DC Motor Speed Control System.
L. Stellema. Oct 74, 13p ATN-7406

Descriptors: *Direct current, *Oscillators, *Speed control, Binary data, Standards, Synchronism.

For abstract, see STAR 1313

PAT-APPL-574 129/GA PC$3.25/MF$2.25
Department of the Navy Washington D C
Solid State Power Controller.
Patent Application,
Emilio Martinez de Pison. Filed 2 May 75, 9p
Rept no.
Government-owned invention available for licensing. Copy of application available NTIS.

Descriptors: *Control systems, Patents, Power equipment, Solid state electronics, Power supplies, Logic circuits, Electric relays.
Identifiers: *Patent applications.

The patent application describes a solid state control system for controlling a high voltage primary power supplied to a plurality of power supplies by means of a TTL voltage level. Circuit means are provided to sense the power supply whose DC voltage goes to zero volts due to circuit anomalies, or other reasons. Upon

sensing the anomaly the indicator means indicate via a storage device which power supply has failed, before interrupting the primary power.

9D. Information Theory

AD-A010 687/2GA PC$3.25/MF$2.25
Massachusetts Inst of Tech Cambridge
Universal Codeword Sets and Representations of the Integers,
Peter Elias. 12 Feb 74, 12p ARO-10197.2-EL
Contract DAHC04-71-C-0039, Grant NSF-GK-37582
Availability: Pub. in IEEE Transactions on Information Theory, vIT-21 n2 p194-p203 Mar 75.

Descriptors: *Coding, *Set theory, *Information theory, *Binary notation, Information transfer, Information processing, Entropy, Sorting, Markov processes, Matrices(Mathematics), Reprints.
Identifiers: *Integer representation, *Representation theory, Prefixes, Universal properties, Memoryless sources, Unary encoding.

Countable prefix codeword sets are constructed with the universal property that assigning messages in order of decreasing probability to codewords in order of increasing length gives an average codeword length, for any message set with positive entropy, less than a constant times the optimal average codeword length for that source. Some of the sets also have the asymptotically optimal property that the ratio of average codeword length to entropy approaches one uniformly as entropy increases. An application is the construction of a uniformly universal sequence of codes for countable memoryless sources, in which the nth code has a ratio of average codeword length to source rate bounded by a function of n for all sources with positive rate; the bound is less than two for n=0 and approaches one as n increases. (Author)

AD-A010 745/8GA PC$3.25/MF$2.25
Massachusetts Inst of Tech Cambridge Research Lab of Electronics
The Existence of Cepstra for Two-Dimensional Rational Polynomials,
Dan E. Dudgeon. 10 Jun 74, 3p
Grant N00014-67-A-024-0064
Availability: Pub. in IEEE Transactions on Acoustics, Speech and Signal Processing, vASSP-23 p242-243 Apr 75.

Descriptors: *Signal processing, Polynomials, Digital systems, Algorithms, Frequency, Phase measurement, Two dimensional, Reprints.
Identifiers: Cepstral analysis, Filters(Mathematics).

The use of cepstral analysis in helpful for some problems where two one-dimensional signals are combined by convolution. In such problems it is important to ensure that the phase function associated with the resultant signal may be defined so that it is a continuous, odd, and periodic function of frequency. One class of one-dimensional signals which have this property is the class whose z-transforms are rational polynomials. In this correspondence, we shall show that these results are extendible to two dimensions, ans that 2-D cepstra can be defined for 2-D rational polynomials. (Author)

AD-A010 848/0GA PC$3.25/MF$2.25
Massachusetts Inst of Tech Cambridge Research Lab of Electronics
Computer Architecture for Signal Processing,
Jonathan Allen. 10 Oct 74, 10p
Contracts DAAB07-74-C-0630, N00014-67-A-0204-0064
Availability: Pub. in Proceedings of the IEEE, v63 n4 p624-633 Apr 75.

Descriptors: *Signal processing, *Computer architecture, Digital systems, Algorithms, Programming languages, Real time, Digital computers, Costs, High rate, Logic circuits, Integrated circuits, Reprints, Memory devices.

There is an increasing trend to use digital signal-processing techniques to solve real-time problems. This leads to a need for processors which can perform complicated signal-processing algorithms on large amounts of data at high speeds. Computer architectures for this purpose are shown to arise from a consideration of several structural factors, including technology, the algorithms to be performed, data structures, and the programming language. When these factors are complementary, efficient yet economical designs result. The structural factors are described, and then several computer designs are discussed in light of this conceptual framework. (Author)

9E. Subsystems

AD-A010 553/6GA PC$3.25/MF$2.25
Hughes Research Labs Malibu Calif
Development of a Reflective Mode Liquid Crystal Light Valve.
Final rept. 5 Dec 72-13 Dec 74,
A. D. Jacobson. May 75, 185p
Contract N00024-73-C-1185

Descriptors: *Screens(Displays), *Liquid crystals, *Valves, Projection, Photoconductors, Thin films, Image projectors, Antireflection coatings, Display systems.
Identifiers: *Light valves, AN/UYZ-4.

The development of a reflective mode liquid crystal light valve suitable for large screen dynamic symbology projection display is described. The device was designed to retrofit into the OSG, OA-8393(V)/UYZ-4 large screen display system developed by the Navy. The light valve consists of a sandwich structure of a thin film photoconductor, light blocking layer, broad visible spectrum dielectric mirror and liquid crystal sandwiched between two glass electrodes with transparent conductive electrodes. There are no matrix elements to define resolution because of the insulating characteristics of the dielectric mirror it is necessary to use ac voltages to operate the light valve. In operation the CdS photoconductor, as a high resolution imaging light activated voltage gate for the liquid crystal. The light blocking layer and dielectric mirror serve to reflect the projection light and prevent this light from reaching the visible sensitive photoconductor.

AD-A010 557/7GA PC$4.75/MF$2.25
Institute for Defense Analyses Arlington Va Science and Technology Div
Exact and Quasi-Optic Diffraction within a Concave Cylinder.
Final rept. Jan 73-Aug 74,
Wasyl Wasylkiwskyj. Aug 74, 86p Rept no. P-1054 IDA/HQ-74-16558
Contract DAHC15-73-C-0200

Descriptors: *Phased arrays, *Diffraction, Waveguides, Green's function, Electric current, Surfaces, Approximation, Partial differential equations, Complex variables.
Identifiers: Geometrical optics.

This report presents a detailed analytical treatment of the surface current distribution induced by a line source on a concave cylindrical surface. The numerical and analytical results provide quantitative estimates of mutual coupling in conformal arrays on concave surfaces.

AD-A010 642/7GA PC$3.75/MF$2.25
Army Engineer Topographic Labs Fort Belvoir Va
Investigation of Continuous Photoconductive Layer Arrays.
Research note,
James W. Gladden, and Pi-Fusy Chen. May 75, 35p Rept no. ETL-0011

Descriptors: *Photoelectric materials, *Photoconductivity, *Photography, Photographic images, Photogrammetry, Optical equipment, Zinc compounds, Cadmium sulfides, Dyes, Optical images, Laser beams, Absorption spectra, Fabrication.
Identifiers: Zinc oxides.

This report compares sintered cadmium sulfide with dye-sensitized zinc oxide in photoconductive layers in 10-wire linear arrays. Array fabrication methods and experimental arrangements are described. Data were obtained on the effect of circuit load resistance, bias voltage, and optical and electronic switching. The uniformity of array response and crosstalk are also described for these continuous layer arrays.

AD-A010 719/3GA PC$5.25/MF$2.25
Illinois Univ Urbana Coordinated Science Lab
Design of Totally Self-Checking Asynchronous Sequential Machines.
Technical rept.,
Fusun Ozguner. May 75, 121p Rept nos. R-679, UILU-ENG-75-2214
Contract DAAB07-72-C-0259

Descriptors: *Switching circuits, Logic circuits, Flip flop circuits, Gates(Circuits), Asynchronous systems, Redundant components, Coding, Theorems, Theses.
Identifiers: *Sequential machines, *Asynchronous sequential circuits, Fault detection, Mealey model.

Properties of state assignments and circuit realizations that lead to totally self-checking asynchronous machine designs are studied. The state variables and the outputs are encoded so that all single and unidirectional faults cause the machine to assume a noncode state or output. Several state assignment methods are presented. One is the two-rail assignment where the feedback lines are checked with a two-rail checker tree. It is shown that any two-rail checker cannot be used because the state assignment does not in general have all the two-rail codewords. Therefore a checker tree that can be checked by the state assignment code must be selected. An algorithm for finding such a tree is presented. The effect of a fault on the encoded outputs is studied. A self-checking circuit produces a noncode output for at least one code space input. It is shown that a self-checking asynchronous machine will produce a noncode output for at least one input sequence which occurs under normal operation. For this design, the destination sets of each input column of the flow table are encoded with a constant weight or another unordered code. Redundancies in the code and in the realization are discussed. It is shown that extra outputs can be used for the detection of primary input faults and for a class of flow tables for faster fault detection.

AD-A010 823/3GA PC$3.25/MF$2.25
Naval Electronics Lab Center San Diego Calif
Receiving Antenna Group Design for 2-30-MHz Operation (Redesign of the AN/SRA-43 Provides Extended Frequency Coverage).
Research and Development rept. Jul 74-Mar 75,
J. L. Lievens. 1 May 75, 25p Rept no. NELC/TR-1951

Descriptors: *Ship antennas, Radio equipment, High frequency, Modification, Antenna radiation patterns.
Identifiers: AN/SRA-43.

A minimal redesign of the present AN/SRA-43 provides a suitable backup shipboard receive antenna for 2-30-MHz operation. On the basis of quasi-minimum shipboard noise levels, the efficiency of the antenna group over a ground plane is judged adequate (except for a 2-dB deficiency between 16 and 17 MHz). Pattern data taken on a model basis show that (1) efficiency on a mast will be a function of mounting height; (2) an untuned antenna mounted horizontally from a ship's mast will show lobing at frequencies above 6 MHz; and (3) there will be less pattern lobing and better low-angle coverage when the antenna is removed from the mast structure and vertically oriented.

AD-A010 864/7GA PC$4.75/MF$2.25
Ohio State Univ Columbus Electroscience Lab
An Experimental Investigation of the T-Bar Fed Slot Antenna on Planar and Cylindrical Surfaces.
Technical rept.,
Michael R. Crews. Mar 75, 79p Rept no. ESL-4111-1
Contract N00140-75-C-6116

Descriptors: *Slot antennas, Antenna apertures, Antenna feeds, Cavities, Insertion loss, Ultrahigh frequency, Microwave antennas, Microwave frequency.

The report describes the results of an intensive experimental effort directed toward the electrical improvement and size reduction of slot antennas. In particular, the T-bar fed cavity backed slot antenna mounted on both a planar surface and also transversely mounted on a circular cylinder are investigated over the four to one frequency bandwidth of 500 to 2000 MHz.

AD-A010 913/2GA PC$4.75/MF$2.25
Stanford Univ Calif Microwave Lab
Acoustically Scanned Image.
Semiannual rept. no. 1, 1 Aug 74-31 Jan 75,
Gordon S. Kino. Feb 75, 78p Rept no. ML-2410
Contract N00014-67-A-0112-0084, ARPA Order-2778

Descriptors: *Image processing, *Optical scanning, Acoustic waves, Surface waves, Images, Signal processing, Silicon, Lithium compounds, Niobates, Zinc compounds, Oxides, Semiconductor devices, Parametric devices, Photodetectors, Coding, Fourier transformation, Acoustooptics, Chirp filters.
Identifiers: *Convolvers, Acoustic surface waves, Lithium niobates.

The report describes work on a new type of optical scanning device which makes use of acoustic surface waves to scan an optical image. The device employs a silicon semiconductor as the photodector; the nonlinear interaction of two acoustic surface waves, whose electric fields interact with the silicon is employed in the basic mechanism of detection. Work on the airgap Si-LiNbO3 convolver configuration which is employed in this optical imaging device is described. Described is the theoretical development of the semiconductor convolver theory. Development of the technology of the ZnO on Si convolver configuration for use in the optical imaging device is discussed. A short description is given of a chirp generator, which was constructed for use in transform coding in these types of devices.

AD-A010 925/6GA PC$4.75/MF$2.25
Stanford Univ Calif Stanford Electronics Labs
Semi-Annual Status Report No. 127, 1 July through 31 Dec 74.
31 Dec 74, 94p Rept no. SU-SEL-74-056
Contract N00014-67-A-0112-0044
See also report dated 30 Jun 74, AD/A-000 286.

Descriptors: *Integrated circuits, *Pattern recognition, *Digital computers, *Plasmas(Physics), *Solid state physics, Information theory, Data compression, Systems analysis, Computer architecture, Parallel processors, Transistors, Ion implantation, Cadmium tellurides, Gas lasers, Solar activity.
Identifiers: *Quantum electronics, Computer aided design, Computer networks.

Contents: Information systems; Digital systems; Integrated circuits; Solid state; Radioscience; Plasma physics and quantum electronics.

AD-A010 927/2GA PC$3.75/MF$2.25
General Electric Co Syracuse N Y Electronics Lab
Analysis of Locked Power Oscillators.
Final rept.,
G. B. Harrold. Dec 73, 31p
Contract N62269-74-C-0066

Descriptors: *Oscillators, Phase locked systems, Voltage controlled oscillators, Phase shift circuits, Frequency modulation, Mathematical analysis.

The major areas considered include the performance of the Locked Power Oscillator under FM types of modulation (including phase shift keying), AM modulation, and a discussion of the stability and lock-in requirements of this type of approach. There is also a brief comparison between this technique and the conventional power amplifier approach. A final subsection contains suggestions for a follow on technical effort, if warranted.

AD-A011 023/9GA PC$4.75/MF$2.25
Illinois Univ Urbana Coordinated Science Lab
Video Imaging on the Plasma Display Panel.
Technical rept.,
Andrew Burton White. Apr 75, 83p Rept nos. R-677, UILU-ENG-75-2212
Contracts DAAB07-72-C-0259, N00014-67-A-0305-0021

Descriptors: *Display systems, Plasmas(Physics), Gray, Video signals, Data compression, Interfaces, Image processing, Theses.
Identifiers: *Plasma display panels, Dither.

The plasma display panel is a versatile bi-level device capable of combining alpha-numerics and graphics in the same display because of its inherent memory and random write and erase feature. The ability to reproduce continuous tone pictures would have several current applications in the area of interactive visual communication systems and computer aided instruction. Many techniques have been suggested to allow gray scale graphics generation on the panel, among them being ordered dither. A review of various gray scale methods and the advantages of ordered dither as a universal algorithm are presented. The design considerations, operation, and results of a low cost, ordered dither interface to realize 65 levels of intensity with a CCTV vidicon camera on a 16 bit parallel panel are given. A review of simple data compression methods that provide a 50 to 80% reduction in storage requirements is presented and the possible implementation of a character plotting code on PLATO-type systems is discussed.

AD-A011 058/5GA PC$40.00/MF$40.00
Reliability Analysis Center Griffiss AFB N Y
Hybrid Microcircuit Reliability Data. First Edition.
May 75, 218p Rept no. RAC-HMRD-0175
Contract F30602-73-C-0065

Descriptors: *Microcircuits, *Reliability(Electronics), Hybrid circuits, Failure(Electronics), Malfunctions, Integrated circuits, Thick films, Thin films, Arrays, Microelectronics.

This first edition of the Hybrid Microcircuit Reliability Data contains test and operational data in both highly summarized and detailed format to provide maximum utilization. Functions which may benefit from this unique publication include: part selection, failure rate predictions, screening decisions, environmental test specification preparation, failure modes and effects analysis and corrective action decisions. Data for HMRD is collected, verified and reduced by the Reliability Analysis Center Engineering Staff to provide objective information for government and industry use. Qualifying codes and descriptors are included in the detailed data presentations to allow the user to select specific subsets of the data for specialized analyses. Analyzed data presentations consist of device experienced vs. predicted failure rates, screening fallout summary, and a failure classification.

AD-913 814/0GA PC$4.25/MF$2.25
Cincinnati Electronics Corp., Ohio.
Electronically Tuned High Power Network.
Final rept.,
C. M. Morris, and G. K. Squire. Aug 73, 74p
Avco-80045-GRC-31/673 ECOM-02320F
Contract DAAB07-69-C-0232
Distribution Limitation now Removed.

Descriptors: *Antenna components, *Tuned circuits, *Tuning devices, Coupling circuits, Impedance matching, Radio equipment, Radiofrequency power, Ferrites, Efficiency, Antenna radiation patterns, Logic circuits, Electronic scanners.
Identifiers: AN/PRC-70, Electronic tuning, Whip antennas.

This report summarizes the total work effort on a program to develop efficient high-power antenna matching networks capable of high-speed electronic tuning and suitable for manpack or airborne applications in both the 30 - 76 Mhz and 2 - 80 Mhz frequency ranges. Included in this report are the final test results and performance characteristics of the 2 - 80 Mhz coupler, a complete description of this coupler, and a comprehensive analysis of the overall requirements and resulting system design.

N75-21520/2GA PC$5.75/MF$2.25
Westinghouse Electric Corp., Baltimore, Md. Systems Development Div.
The Solid-State Ku-Band Power Amplifier.
Final Report, Aug. 1971 - Aug. 1974.
B. D. Geller. 10 Feb 75, 140p NASA-CR-143722
Contract NAS5-20291

Descriptors: *Amplifier design, *Power amplifiers, *Solid state devices, Diodes, Hybrid circuits, Systems engineering.

For abstract, see STAR 1313

N75-21521/0GA PC$3.25/MF$2.25
Radio Corp. of America, Princeton, N.J.
Design, Processing, and Testing of Lsi Arrays for Space Station.
Quarterly Technical Report, 1 Oct. - 31 Dec. 1974.
W. C. Schneider. Mar 75, 19p NASA-CR-120735, PRRL-75-CR-20
Contract NAS12-2207

Descriptors: *Large scale integration, *Space stations, Circuits, Performance tests, Random access memory, Silicon junctions, Silicon transistors, Wafers.

For abstract, see STAR 1313

PAT-APPL-459 143/GA PC$3.25/MF$2.25
Department of the Navy Washington D C
Wide Angle Single Channel Projection Apparatus.
Patent Application,

Wily C. Dykes. Filed 8 Apr 74, 14p Rept no.
Government-owned invention available for licensing. Copy of application available NTIS.

Descriptors: *Display systems, Patents, Projection, Wide angles, Mirrors, Screens(Displays), Scenes.
Identifiers: *Patent applications, PAT-CL-350-288.

The patent application uses a vertically positioned arc lamp and associated lamp collector-reflector in conjunction with depending associated secondary and projection mirrors, the projection mirror being convex and centrally apertured to form an exit pupil closely adjacent and above the head of an observer and in the center of a curved projection screen to minimize perspective distortion of image as seen by the viewer. The invention further provides an elimination of shadow effect by the depending relationship of the apparatus and by the recessing of arc lamp electrode through an aperture in the lamp reflector. An adaption of image spacing by recessed fitting of image on film to adapt the film to intended projector image width is also an aspect of the invention.

PAT-APPL-470 415/GA PC$3.25/MF$2.25
Department of the Navy Washington D C
Multi-Wavelength Display System.
Patent Application,
Wendell N. Mohon. Filed 16 May 74, 11p Rept no.
Government-owned invention available for licensing. Copy of application available NTIS.

Descriptors: *Display systems, Patents, Colors, Lasers, Infrared equipment, Microwave equipment, Television display systems, Facsimile equipment.
Identifiers: *Patent applications, PAT-CL-178-5-2-R.

The patent application describes an improved multi-wavelength display system. A multi-wavelength beam source or sources are employed in combination with a multitude of waveguides in groups, one group for each wavelength, with image data responsive modulators to directly modulate said multi-wavelength beams and with a common rotary waveguide scanning means to produce a multi-wavelength facsimile display which could be color television, infrared or microwave displays according to the selected source or sources.

PAT-APPL-472 560/GA PC$3.25/MF$2.25
Department of the Navy Washington D C
Variable-Impedance Delay Line Correlator.
Patent Application,
Harper John Whitehouse. Filed 23 May 74, 18p Rept no.
Government-owned invention available for licensing. Copy of application available NTIS.

Descriptors: *Correlators, Patents, Delay lines, Low pass filters, Decoding, Signal processing.
Identifiers: *Patent applications, PAT-CL-333-30-RX.

An object of the patent application is to provide a variable-impedance delay-line correlator capable of many types of implementation, inductance-capacitance, surface-wave piezoelectric device, or a bulk-wave device, or using other types of parameters. Yet another object of the invention is to provide a delay-line correlator using low-pass filter capable of decoding the output signal into its components.

PAT-APPL-518 000/GA PC$3.25/MF$2.25
Department of the Navy Washington D C
Simulator Including Improved Holographic Heads up Display System.
Patent Application,
George Derderian. Filed 25 Oct 74, 14p Rept no.

Government-owned invention available for licensing. Copy of application available NTIS.

Descriptors: *Simulators, *Head up displays, Patents, Holography, Training devices, Light transmission, Valves.
Identifiers: Light valves, *Patent applications, PAT-CL-350-3-5.

The patent application describes a simulator including an improved holographic heads up display system in which the projection of images, via a plurality of slide projectors, through several light ray channels or paths, are controlled by polarizer light valves, associated one with each respective channel, and the output or outputs of the channels dependent upon the on-off conditions of the several light valves, is passed through a holographic lens as a window to the eye of an observer. Means are also provided to maintain a desired light level intensity at said window by coordinated adjustment of the light valves. A further aspect of the invention contemplates the provision of vehicular control means connected to recording charts on which a prerecording of correct response to a programmed display has been made on each chart to compare the actual trainee controls movement with the proper movement for the exercise.

PAT-APPL-557 191/GA PC$3.25/MF$2.25
Department of the Navy Washington D C
Noise Riding Threshold.
Patent Application,
Robert W. Jones. Filed 10 Mar 75, 7p Rept no.
Government-owned invention available for licensing. Copy of application available NTIS.

Descriptors: *Voltage regulation, Patents, Threshold effects, Receivers, Noise, Voltage, Circuits, Video signals.
Identifiers: *Patent applications.

The patent application relates to a network that is designed to be insensitive to signal video while sensing random noise voltages and providing output voltages suitable for use in automatically adjusting threshold voltages of receivers above the noise spikes. The input signal is filtered, inverted and rectified to separate the noise component from the signal. The noise component is then converted to a negative level voltage which is added to first and second preset voltages. A non-linear output voltage which is a function of the first signal sum is provided for driving the voltage threshold devices in external equipment. A linear voltage output which is a function of the second signal sum is also provided for driving the voltage threshold devices of external equipment.

PAT-APPL-574 216/GA PC$3.25/MF$2.25
Department of the Navy Washington D C
Two Dimensional Array Antenna.
Patent Application,
Joseph H. Provencher. Filed 5 May 75, 9p Rept no.
Government-owned invention available for licensing. Copy of application available NTIS.

Descriptors: *Phased arrays, Patents, Two dimensional, Antenna arrays, Beam forming, Phase shift circuits, Beam steering, Ferrites, Radar antennas, Fire control radar, Radar navigation, Integrated systems, Ship antennas.
Identifiers: *Patent applications, PAT-CL-343-754.

The patent application describes two dimensional beam steering of an antenna array that is effected by feeding a plurality of radiating elements from a hybrid matrix that is a beam forming and phasing network in combination with single pole multiple throw switches where switching the various matrix terminals give the elevation beams. Ferrite phase shifters feeding into the single pole multiple switching means provides steering of the antenna beam in the azimuth plane.

PATENT-3 860 892 Not available NTIS
Department of the Navy Washington D C
Cascade Transversal Filter Amplitude-Compensation Network.
Patent,
Jeffrey M. Speiser, and George W. Byram. Filed 25 Feb 74, patented 14 Jan 75, 7p Rept nos. PAT-APPL-445 366,
Government-owned invention available for licensing. Copy of patent available Commissioner of Patents, Washington, D.C. 20231 $0.50.

Descriptors: *Electric filters, *Patents, Linearity, Transverse, Cascade structures, Transfer functions, Compensation, Amplitude, Networks.
Identifiers: PAT-CL-333-70-T.

The patent provides an amplitude-compensation network which is fairly easy to implement, even if the transfer function desired is complicated in structure. Another object of the invention is to provide an amplitude-compensation network suitable for use where a filter must be designed to close specifications. Yet another object of the invention is to provide a network which has a greater time-bandwidth product than prior art single transversal filters used for the same purpose.

PATENT-3 876 943 Not available NTIS
Department of the Navy Washington D C
Impulse Noise Reduction Circuit.
Patent,
Arthur D. Watt, Eugene L. Maxwell, and Robert Marshall Coon. Filed 18 Feb 60, patented 8 Apr 75, 10p Rept nos. PAT-APPL-9 659,
Government-owned invention available for licensing. Copy of patent available Commissioner of Patents, Washington, D.C. 20231 $0.50.

Descriptors: *Noise reduction, *Patents, Circuits, Impulse noise, Radio receivers.
Identifiers: PAT-CL-325-475.

The patent relates to noise reducing circuits for use with radio receivers and in particular with impulse reducing circuits.

10. ENERGY CONVERSION (NON-PROPULSIVE)

10A. Conversion Techniques

AD-A010 712/8GA PC$5.75/MF$2.25
Hittman Associates Inc Columbia Md
Projections of Energy Availability, Cost, and Aggregate Demand for 1975, 1980, 1985 and 1990.
Final rept.,
H. M. Berstein, B. K. Hinkle, and E. O. Bazques. May 75, 137p CERL-TR-E-58
Contract DACA88-74-C-0040

Descriptors: *Energy, Petroleum products, Natural gas, Coal, Nuclear energy, Hydrodynamics, Solar energy, Geothermy, Electric power, Electricity, Abundance, Costs, Fuel consumption, Forecasting.
Identifiers: *Energy demand, *Energy supplies, Manufactured gas, Geothermal resources, Hydroelectric power generation, Electric power demand, Availability, Demand(Economics).

This report investigates the availability, cost, and aggregate demand of energy resources for 1975, 1980, 1985, and 1990. The consumption of energy resources for 1970 has been included

for comparative purposes. The energy sources examined include: petroleum, gas, coal, nuclear, hydropower, solar, geothermal, and electricity.

AD-A010 938/9GA PC$3.25/MF$2.25
Rand Corp Santa Monica Calif
Effects of Energy Shortages on the Way We Live,
Deane N. Morris. Dec 74, 25p Rept no. P-5377

Descriptors: *Fuel consumption, *Energy conservation, Transportation, Residential section, Housing(Dwellings), Policies.
Identifiers: Energy shortages, National government, Government policies.

Energy use in personal transportation and residential buildings is briefly discussed along with methods that consumers have to reduce the impact of higher energy prices or scarcity of supplies. Government policy alternatives for energy conservation are noted.

AD-A010 968/6GA PC$3.75/MF$2.25
Rand Corp Santa Monica Calif
Direct and Indirect Energy Demand Models for DoD,
C. C. Mow. Jun 74, 31p Rept no. P-5273
See also report dated Aug 74, AD-784 964.

Descriptors: *Fuel consumption, Department of Defense, Models, Forecasting, Military Forces(United States), Military requirements, Military supplies.
Identifiers: Energy use, Energy demand, *Energy consumption, Electric power demand.

To properly assess the impact of the energy shortage on national security, it is essential to have an insight into how energy is used in support of the military. This report presents some of the results of the energy demand models currently being developed under ARPA sponsorship. Two energy models are described: (1) Direct energy model: A USAF Energy Consumption Projection Model; (2(Indirect energy demand model : Energy Consumption by Industries in Support of National Defense.

N75-21794/3GA PC$3.25/MF$2.25
National Aeronautics and Space Administration. Lewis Research Center, Cleveland, Ohio.
Solar Collector Performance Evaluated Outdoors at NASA-Lewis Research Center.
R. W. Vernon. 1974, 7p NASA-TM-X-71689
Conf-Presented at Workshop on Solar Collectors for Heating and Cooling of Buildings, New York, 21-23 Nov. 1974; Sponsored by NSF.

Descriptors: *Performance prediction, *Research facilities, *Solar collectors, Solar energy, Solar heating.

For abstract, see STAR 1313

N75-21795/0GA PC$3.75/MF$2.25
National Aeronautics and Space Administration. Lewis Research Center, Cleveland, Ohio.
Plans and Status of the NASA-Lewis Research Center Wind Energy Project.
R. Thomas, R. Puthoff, J. Savino, and W. Johnson. 1975, 31p NASA-TM-X-71701, E-8309
Conf-Proposed for Presentation at Joint Power Conf., Portland, Oreg., 28 Sep. - 1 Oct. 1975; Cosponsored by IEEE and Asme.

Descriptors: *Energy policy, *Management planning, *Windpower utilization, Systems management, Windpowered generators.

For abstract, see STAR 1313

N75-21796/8GA PC$4.75/MF$2.25
Kanner (Leo) Associates, Redwood City, Calif.
Wind Power Installations. Present Condition and Possible Lines of Development.
Y. M. Fateyev. Mar 75, 80p NASA-TT-F-16204
Contract NASW-2481
Tran-Transl. Into English from Vetrosilovyye Ustanovki Sosttoyaniye I Puti Razvitiya (Moscow), 1959 80 p.

Descriptors: *Energy policy, *Research and development, *Windpower utilization, Autorotation, Energy conversion efficiency, Milling machines, Wind velocity measurement, Windpowered generators, Windpowered pumps.

For abstract, see STAR 1313

PAT-APPL-459 991/GA PC$3.25/MF$2.25
Energy Research and Development Administration, W. shington, D.C.
Energy Conversion System.
Patent Application,
Ridgway M. Banks. Filed 11 Apr 74, 24p
Government-owned invention available for licensing. Copy of application available NTIS.

Descriptors: *Patent applications, *Motors, Thermodynamics, Alloys, Thermal stability, Deformation, Motor rotors, Heat, Energy conversion heat sources, Heat engines.
Identifiers: Energy conversion, Materials with memory, PAT-CL-60-529.

The patent application describes an apparatus for converting thermal energy to rotary mechanical work. It uses, as the torque producing element, at least one thermally responsive element composed of a thermal memory material, that is, a material which when heat-treated at a temperature above its characteristic critical temperature in a given configuration (designated heat-treated configuration) and then deformed at a temperature below its critical temperature will revert back to its heat-treated configuration when heated to a temperature above its critical temperature. The present apparatus comprises a rotor, preferably a circular rotor such as an annulus or a disk, adapted to rotate about a fixed axis.

PB-241 462/1GA PC$3.75/MF$2.25
Joint Continuing Committee for Scientific Cooperation.
Seminar on Industrial Energy Conservation and Seminar on Solar Space Heating and Cooling Held in Seoul (Republic of Korea) on 13-15 November 1974.
Staff summary rept.
1975, 28p
Contract AID/csd-2584

Descriptors: *Energy conservation, *Energy policy, *Meetings, Energy management, Solar space heating, Solar air conditioning, Industries, Korea.

As part of the activities of the Joint Continuing Committee for Scientific Cooperation, the main purpose of which is to provide recommendations on specific application of science and technology to Korea's economic and social development, the Ministry of Science and Technology of the Republic of Korea and the National Academy of Sciences sponsored two workshops on the vitally important topics of energy conservation and solar space heating and cooling. The report presents a summary of the proceedings, and includes an agenda and a list of participants.

PB-241 820/0GA PC$4.25/MF$2.25
Federal Energy Administration, Washington, D.C. Office of Conservation and Environment.
Federal Energy Management Program. Fiscal Year 1974.
Annual rept. no. 1.
Dec 74, 60p FEA/D-74/194

Descriptors: *Energy policy, *Government policies, *Energy conservation, *Energy consumption, Fuel consumption, Electric power demand, Electricity, Natural gas, Fuel oil, Coal, Gasoline, Petroleum products, Diesel fuels, Liquefied petroleum gases, Jet engine fuels, Statistical data, Tables(Data).
Identifiers: Electric power consumption.

Government policies pertaining to energy conservation are reviewed and various agency programs and accomplishments noted. Summary sheets on energy usage by government agencies are included.

PB-241 821/8GA PC$4.25/MF$2.25
Kellogg (M. W.) Co., Houston, Tex. Research and Engineering Development.
Identification and Characterization of the Use of Mixed Conventional and Waste Fuels.
Environmental protection technology series (Final),
Gopal K. Mathur. Feb 75, 65p EPA/650/2-75-017
Contract EPA-68-02-1308

Descriptors: *Fuel consumption, *Fuels, *Air pollution, Petroleum industry, Refineries, Cements, Textile industry, Glass industry, Chemical industry, Electric utilities, Industries, Fuel oil, Coal, Natural gas, Mixtures, Mixing, Burners, Design, Drawings, Questionnaires.
Identifiers: Mixed fuels, Liquid wastes, Oil wastes.

The major objective of this study was to identify and classify types and properties of mixed fuels presently in use, and types of stationary processes using mixed fuels. Types of mixed fuels include mixed oils; oil and gas; coal and oil; coal and gas; by-product gases and fuels; by-product chemical waste; and mixtures of chemical wastes and conventional fossil fuels. The scope of the task covered industries in the category of Utilities, Petroleum Refineries, Petrochemical, Chemical Processing (excluding fertilizer), Glass, Cement and Textile. A list of manufacturers of mixed fuel burners was developed.

PB-241 856/4GA PC$3.25/MF$2.25
Federal Energy Administration, Washington, D.C. Office of Energy Conservation and Environment.
Federal Energy Management Program. Fiscal Year 1975.
Quarterly rept. no. 1. Jul-Sep 74.
Sep 74, 10p FEA/D-75/283R, Conservation Paper-2

Descriptors: *Energy consumption, *National government, *Energy conservation, Fuel oil, Natural gas, Electricity, Coal, Gasoline, Propane, Diesel fuels, Jet engine fuels, Liquefied petroleum gases, Statistical data, Tables(Data), Government policies.

Statistical data on energy conservation performance by various government agencies during first quarter of fiscal year 1975 are presented.

PB-241 919/0GA PC$7.00/MF$2.25
Abt Associates, Inc., Cambridge, Mass.
Cost-Effective Methods to Reduce the Heating and Cooling Energy Requirements of Existing Single-Family Residences.
Final rept.,
Allan D. Ackerman, Peter T. Hogarth, Bryan J. Burke, and Robert F. Stone. Feb 75, 185p* AAI-75-19
Contract HUD-H-2179

Descriptors: *Residential buildings, *Energy conservation, Insulation, Caulking, Weatherstripping, Storm windows, Ventillation, Barrier coatings, Fuel consumption, Cost effectiveness.

Group 10A—Conversion Techniques

This report investigates many practical ways to reduce energy consumed in the heating and cooling of family homes. Existing house construction types are studied, and energy conservation techniques that apply to these types are discussed with respect to cost and potential fuel savings.

PB-241 926/5GA PC$4.25/MF$2.25
Dow Chemical Co., Freeport, Tex. Texas Div.
Energy Consumption: Paper, Stone/Clay/Glass/Concrete, and Food Industries.
Final rept. Aug 74-Mar 75,
John T. Reding, and Burchard P. Shepherd. Apr 75, 60p* EPA/650/2-75-032-c
Contract EPA-68-02-1329
See also PB-241 927.

Descriptors: *Energy consumption, *Glass industry, *Concrete plants, *Food industry, *Paper industry, Portland cements, Fuel consumption, Electric power demand, Natural gas, Fuel oil, Electricity, Coal, Rocks, Clays, Heat loss, Energy conservation, Industries.
Identifiers: Standard industrial classification code, SIC 26, SIC 32, SIC 20, SIC 2611, SIC 2621, Electric power consumption.

The report gives results of a study of energy consumption in the paper, stone/clay/glass/concrete, and food industries. It analyzes energy-intensive steps or operations for commonly used manufacturing processes. Results of the analyses are in the form of energy consumption block diagrams, energy-intensive equipment schematic diagrams, and tables that indicate the causes of energy losses, as well as possible conservation approaches.

PB-241 927/3GA PC$4.25/MF$2.25
Dow Chemical Co., Freeport, Tex. Texas Div.
Energy Consumption: The Chemical Industry.
Final rept. Aug 74-Mar 75,
John T. Reding, and Burchard P. Shepherd. Apr 75, 71p* EPA/650/2-75-032-a
Contract EPA-68-02-1329
See also PB-241 926.

Descriptors: *Energy consumption, *Chemical industry, Energy conservation, Electrolysis, Evaporation, Pyrolysis, Alkylation, Dehydrogenation, Oxidation, Distillation, Furnaces, Chlorine, Sodium hydroxide, Ethylene, Ethyl benzene, Styrene, Phenol, Acetone, Cumene, Carbon black, Sodium carbonates, Oxygen, Nitrogen, Equipment, Design, Industrial engineering, Manufacturing, Production engineering, Heat recovery, Fuel consumption.
Identifiers: SIC 28, Electric power consumption.

The report gives results of a study of energy consumption in the chemical industry. It analyzes energy-intensive steps or operations for manufacturing processes which produce 12 of the top 50 volume chemicals in the U.S. Results of the analyses are in the form of energy consumption block diagrams, energy-intensive equipment schematic diagrams, and tables that indicate the causes of energy losses, as well as possible conservation approaches.

10B. Power Sources

AD-A010 836/5GA PC$3.25/MF$2.25
Dayton Univ Ohio Research Inst
Charge-Density Limitation in Electrofluid Dynamic Power Generation.
Journal article,
Theodore L. Willke, and John E. Minardi. 13 Jul 74, 4p ARL-75-0172
Contract F33615-72-C-1220
Availability: Pub. in IEEE Transactions on Electron Devices, p202-204 Apr 75.

Descriptors: *Electrohydrodynamics, *Electric generators, Nonuniform, Electric power production, Electrodes, Electric fields, Electric charge, Density, Reprints.
Identifiers: *Electrofluid dynamic generators, Unipolar charge.

The effects of the presence of shielding electrodes on the electric fields in electrofluid dynamic (EFD) generator channels are studied. For each case studied, the magnitude of the field distortion is found as the ratio of the maximum electric field to the undisturbed maximum field. The electric-field magnification is derived as a function of both the relative size and sharpness of the protruding electrode and the relative size of the charge cloud. A charge-density attenuation coefficient is defined as the inverse of the electric-field magnification. (Author)

GESR-2114 PC$10.00/MF$2.25
General Electric Co., Pleasanton, Calif. Nuclear Thermionic Power Operation.
Thermionic Material and Fabrication Development Status Summary.
J. C. Danko, T. L. Gregory, and J. R. Thompson. 30 Jun 68, 137p
Contract AT(04-3)-189

Descriptors: (*Thermionic fuel elements, *Research programs), (*Thermionic converters, Research programs), (*Uranium dioxide, *Microstructure), (*Tungsten, *Chemical vapor deposition), Brazing alloys, Electron beam welding, Fuel pellets, Palladium, Physical radiation effects, Thermionic emission.

For abstract, see NSA 31 12, number 33717.

MND-P-2775-2 PC$15.25/MF$2.25
Martin Marietta Corp., Baltimore, Md.
Snap 9A Radioisotope--Fueled Generator. Final Safety Analysis for Transit Mission.
T. J. Dobry. Mar 63, 244p
Contract AT(30-1)-2871

Descriptors: (*Snap 9 battery, Thermoelectric generators), (*Thermoelectric generators, *Safety), (*Spacecraft power supplies, Snap 9 battery), Ablation, Aerodynamics, Plutonium 238, Reentry, Satellites, Space flight, Testing, Thermal analysis.

For abstract, see NSA 31 12, number 32802.

MND-2062-06-7 PC$18.50/MF$2.25
Martin Marietta Corp., Baltimore, Md.
Snap 29: Power Supply System. Third Quarterly Progress Report.
Aug 67, 306p
Contract AT(29-2)-2062

Descriptors: (*Snap 29 battery, *Research programs), (*Spacecraft power supplies, Snap 29 battery), Polonium 210, Power range 100-1000 w, Thermoelectric generators.

For abstract, see NSA 31 12, number 32801.

NYO-3584-1 PC$23.50/MF$2.25
Westinghouse Electric Corp., Pittsburgh, Pa. Astronuclear Lab.
Compact Thermoelectric Converter. Final Progress Report, June 28--December 31, 1965.
15 Jan 66, 410p WANL-PR(CC)-006
Contract AT(30-1)-3584

Descriptors: (*Spacecraft power supplies, Thermoelectric generators), (*Thermoelectric generators, *Research programs), Design, Fabrication, Performance testing, Plutonium 238, Power range 1-10 kw, Power range 10-100 kw, Quality assurance, Radioisotope heat sources, Reliability, Snap reactors.

For abstract, see NSA 31 12, number 32803.

NYO-3584-10 PC$9.00/MF$2.25
Westinghouse Electric Corp., Pittsburgh, Pa. Astronuclear Lab.
Compact Thermoelectric Converter. Phase II-B. Quarterly Progress Report, January 1--March 31, 1968.
12 Apr 68, 116p WANL-PR(CC)-033
Contract AT(30-1)-3584

Descriptors: (*Spacecraft power supplies, Thermoelectric generators), (*Thermoelectric generators, *Research programs), Design, Destructive testing, Fabrication, Operation, Performance, Performance testing, Power range 1-10 kw, Power range 10-100 kw, Quality assurance.

For abstract, see NSA 31 12, number 32807.

NYO-3584-2 PC$9.25/MF$2.25
Westinghouse Electric Corp., Pittsburgh, Pa. Astronuclear Lab.
Compact Thermoelectric Converter. Phase II-a. Quarterly Progress Report, January 1--March 31, 1966.
14 Apr 66, 123p WANL-PR(CC)-009
Contract AT(30-1)-3584

Descriptors: (*Spacecraft power supplies, Thermoelectric generators), (*Thermoelectric generators, *Research programs), Design, Destructive testing, Fabrication, Performance testing, Power range 1-10 kw, Power range 10-100 kw, Quality assurance, Radioisotope heat sources, Reliability, Snap reactors.

For abstract, see NSA 31 12, number 32804.

NYO-3584-3 PC$10.25/MF$2.25
Westinghouse Electric Corp., Pittsburgh, Pa. Astronuclear Lab.
Compact Thermoelectric Converter. Phase II-a. Quarterly Progress Report, April 1--June 30, 1966.
14 Jul 66, 144p WANL-PR(CC)-012
Contract AT(30-1)-3584

Descriptors: (*Spacecraft power supplies, Thermoelectric generators), (*Thermoelectric generators, *Research programs), Design, Destructive testing, Performance testing, Power range 1-10 kw, Power range 10-100 kw, Quality assurance, Radioisotope heat sources, Reliability, Snap reactors.

For abstract, see NSA 31 12, number 32805.

NYO-3584-4 PC$10.00/MF$2.25
Westinghouse Electric Corp., Pittsburgh, Pa. Astronuclear Lab.
Compact Thermoelectric Converter. Phase II-a. Quarterly Progress Report, July 1--September 30, 1966.
14 Oct 66, 140p WANL-PR(CC)-015
Contract AT(30-1)-3584

Descriptors: (*Spacecraft power supplies, Thermoelectric generators), (*Thermoelectric generators, *Research programs), Destructive testing, Leaks, Performance testing, Power range 1-10 kw, Power range 10-100 kw, Quality assurance, Radioisotope heat sources, Reliability, Snap reactors.

For abstract, see NSA 31 12, number 32806.

N75-21513/7GA PC$3.75
General Electric Co., Utica, N.Y. Aerospace Electronic Systems.
Dc-DC Converters.
Final Report.
28 Oct 74, 50p NASA-CR-120728
Contract NAS8-26383

Descriptors: *Direct current, *Direct power generators, *Tables (Data), Electrical proper-

ties, Engineering drawings, Mechanical properties, Operational problems, Performance tests.

For abstract, see STAR 1313

WANL-TMI-1529 PC$4.00/MF$2.25
Westinghouse Electric Corp., Pittsburgh, Pa. Astronuclear Lab.
Compact Thermoelectric Converter Program.
F. D. Lucente. 9 Sep 65, 8p

Descriptors: (*Lead tellurides, *Mechanical properties), (*Magnesium silicates, Mechanical properties), (*Boron nitrides, Mechanical properties), Compression, Testing, Thermoelectric properties.

For abstract, see NSA 31 12, number 33724.

WANL-TMI-1808 PC$4.50/MF$2.25
Westinghouse Electric Corp., Pittsburgh, Pa. Astronuclear Lab.
Performance Evaluation of Silicon--Germanium--Lead--Telluride Cascaded Tubular Thermoelectric Modules.
L. E. VanBibber. 22 Aug 67, 29p

Descriptors: (*Thermoelectric generators, Thermocouples), (*Thermocouples, *Performance), Germanium, Lead tellurides, Performance testing, Silicon.

For abstract, see NSA 31 12, number 32808.

10C. Energy Storage

N75-21792/7GA PC$5.25/MF$2.25
Tyco Labs., Inc., Waltham, Mass.
Nickel-Cadmium Cells.
Final Report, 30 Mar. 1972 - 30 May 1973.
E. J. Rubin, and M. J. Turchan. Aug 74, 116p
NASA-CR-143715, C-227
Contract NAS5-23102

Descriptors: *Aerospace environments, *Design analysis, *Nickel cadmium batteries, Performance, Prototypes, Quality control.

For abstract, see STAR 1313

11. MATERIALS

11A. Adhesives and Seals

PATENT-3 874 677 Not available NTIS
National Aeronautics and Space Administration. Lewis Research Center, Cleveland, Ohio.
High Speed, Self-Acting Shaft Seal.
Patent.
L. P. Ludwig, and W. F. Hady. Patented 1 Apr 75, 6p PAT-APPL-380 630
Misc-Filed 19 Jul. 1973 Supersedes N73-29457 (11 - 20, p 2422).
Government-owned invention available for licensing. Copy of patent available from Commissioner of Patents, Washington, D.C. 20231 $.50.

Descriptors: *Seals (Stoppers), *Turbine engines, *Turboshafts, Force distribution, High speed, *Patents, Product development, Weather.
Identifiers: PAT-CL-277-27.

A high-speed, self-acting circumferential type shaft seal for use in turbine engines is disclosed. One or more conventional circumferential ring seals having a central aperture are mounted in a housing. In three of the four embodiments of the invention, a helical groove and one or more dam seals are cut in the inner cylindrical surface of the one or more ring seals. In a fourth embodiment, two or more lift pads are disposed in surface contact with the inner cylindrical surface of the seal rings. To the outside of the lift pads, two dam seals are cut in the inner cylindrical surface of two of the ring seals. In each of the embodiments, a net outward radial force was produced during rotation of the turbine causing the ring seals to lift out of contact with the turbine shaft to minimize wear of the ring seals.

11B. Ceramics, Refractories, and Glasses

AD-A010 623/7GA PC$5.75/MF$2.25
Battelle Columbus Labs Ohio
High Temperature Compressive Creep of Yttria Stabilized Zirconia.
Interim rept. 1 Jan 72-30 Sep 74,
Patrick K. Talty, and Martin S. Seltzer. Mar 75, 143p ARL-75-0023
Contract F33615-73-C-4111
See also AD-737 021.

Descriptors: *Zirconium oxides, Creep, Yttrium oxides, Stabilization, Heaters, Heat exchangers, Hypersonic wind tunnels, Brick, Plastic deformation, Microstructure.

Studies were conducted to define the creep behavior of yttria stabilized zirconia (YSZ) at temperatures to 2000 degrees C under conditions of stress, temperature, and environment that are encountered in storage heaters used in blow down wind tunnels. Compression creep tests were performed as a function of yttria content (in the range 10.2 to 16.5 weight percent Y2O3), density, and grain size on specimens with various impurity concentrations and porosity distributions.

AD-A010 857/1GA PC$3.75/MF$2.25
Harvard Univ Cambridge Mass Div of Engineering and Applied Physics
Transformation Behavior of Pd-Au-Si Metallic Glasses.
Interim technical rept.,
C. -P. Peter Chou, and David Turnbull. May 75, 35p Rept no. TR-6
Contract N00014-67-A-0298-0036

Descriptors: *Silicides, *Amorphous materials, *Phase transformations, Crystallization, Palladium compounds, Gold compounds, X rays, Calorimetry, Annealing, Glass.
Identifiers: Spinodal decomposition, *Palladium silicides, *Gold silicides.

The transformation behavior of roller-quenched amorphous Pd(0.82-x)Au(x)Si(0.18) and Pd(0.835-x)Au(x)Si(0.165) alloys, where x = or < 0.10, after rapid heating to temperatures near to or above T sub g, is reported. Binary Pd(0.18)Si(0.18) alloys crystallized to an f.c.c. phase without apparent composition segregation. The tendency to phase separate at T near T sug g, as manifested by small (SAXS) and large angle x-ray scattering and calorimetry, increased with increasing Au substitution. PD(0.8)Au(0.035)Si(0.165) alloy apparently phase separated by a nucleation and growth mechanism, with a growth rate limited by the melt viscosity, to form an f.c.c. phase dispersed in an amorphous phase which later crystallized. Pd(0.74)Au(0.8)Si(0.18 alloy phase spearated initially to two melts each of which later crystallized in turn. The initial separation behavior was generally consistent with the predictions of the spinodal theory but with some deviation from Cahn's linear relation.

AD-A011 111/2GA PC$3.25/MF$2.25
Rensselaer Polytechnic Inst Troy N Y Dept of Materials Engineering
Griffith Fracture Equation - An Experimental Test.
Robert H. Doremus, and Edward K. Pavelchek. Jun 75, 12p
Contract N00014-67-A-0117-0014

Descriptors: *Fracture(Mechanics), *Glass, Defects(Materials), Crack propagation, Aging(Materials), Surface properties, Brittleness.
Identifiers: Griffith crack.

The Griffith Fracture Equation was not followed when the strengths of rods of soda-lime glass tested immediately after abrading and after abrading and then aging 24 hours in water were compared. The aged samples were stronger than samples not aged, but the cracks in both were of nearly the same length. Two possible explanations of this discrepancy are explored.

CEA-CONF-2878 PC$4.00/MF$2.25
CEA Centre d'Etudes Nucleaires de Saclay, 91 - Gif-sur-Yvette (France).
Refractory Oxides Fused or Vaporized in a Plasma Furnace.
D. Yerouchalmi, and S. Dallaire. 8p CONF-740750-1
U.S. Sales Only.

Descriptors: (*Plasma furnaces, *Design), (*Magnesium oxides, *Melting), (*Refractories, Melting), (*Oxides, Melting), Cea saclay, Evaporation.

For abstract, see NSA 31 12, number 33712.

CEA-CONF-2896 PC$4.00/MF$2.25
CEA Centre d'Etudes Nucleaires de Grenoble, 38 (France). Dept. de Metallurgie.
Morphology and Structure of Pyrocarbon Deposited in a Fluidized Bed. Isotropic and Anisotropic Pyrocarbons: Effects of the Irradiation.
J. Pelissier, and L. Lombard. 28 Aug 74, 16p
CONF-7410102-1
U.S. Sales Only.

Descriptors: (*Pyrolytic carbon, *Microstructure), (*Htgr type reactors, *Coated fuel particles), Anisotropy, Electron microscopy, Fluidized bed, Isotropy, Methane, Physical radiation effects, Porosity, Propylene, Pyrolysis.

For abstract, see NSA 31 12, number 34030.

CONF-750403-1 PC$4.00/MF$2.25
Kernforschungsanlage Juelich G.m.b.H. (F.R. Germany). Inst. fuer Reaktorwerkstoffe und Heisse Zellen; Olin Mathieson Chemical Corp., New Haven, Conn.
Influence of the Structure and the Inner Surface Area on the Irradiation Resistance of Pyrocarbon Coatings.
P. Krautwasser, H. Luhleich, H. Hoven, E. Pollmann, and C. S. Yust. 1975, 10p

Descriptors: (*Pyrolytic carbon, *Physical radiation effects), Coatings, Electron microscopy, Microstructure, Order parameters, Oxidation, Porosity, X-ray diffraction.

For abstract, see NSA 31 12, number 34031.

COO-3420-4 PC$4.50/MF$2.25
Pennsylvania State Univ., University Park Coll. of Earth and Mineral Sciences.
Ceramic Research on Transformational Superplasticity and Stoichiometry Effects on Fracture. Progress Report, June 1, 1974--May 31, 1975.
R. C. Bradt, and J. H. Hoke. 1 Mar 75, 30p
Contract AT(11-1)-3420

Descriptors: (*Bismuth oxides, *Fracture properties), (*Samarium oxides, Fracture properties), (*Tungstates, Fracture properties), (*Bismuth compounds, Fracture properties), Binary mixtures, Eutectoids, Molybdates, Plasticity, Steels, Stoichiometry, Strains, Stresses, Titanium oxides.

For abstract, see NSA 31 12, number 33713.

PATENT-3 859 422 Not available NTIS
Atomic Energy Commission, Washington, D.C.
Method for Reproducibly Controlling the Crystallinity of Synthetic Graphite.
Patent,
Ottis J. Horne, Jr., and Wesley E. Smith. Filed 16 Oct 72, patented 7 Jan 75, 5p PAT-APPL-298 136
Government-owned invention available for licensing. Copy of patent available Commissioner of Patents, Washington, D.C. 20231 $0.50.

Descriptors: *Patents, *Graphite, *Thermosetting resins, *Thermoplastic resins, Microstructure, Crystal structure, Carbonization.
Identifiers: PAT-CL-423-448, Indenes.

Method for reproducibly controlling the crystallinity of synthetic graphite. A synthetic graphite precursor is prepared from a binary mixture of a thermoplastic resin precursor derived from indene and a thermosetting resin precursor of the same derivation. The crystalline microstructure of the graphite is reproducibly controlled by selectively varying the quantity of the thermosetting resin employed in the precursor mixture.

SAND-75-0043 PC$4.00/MF$2.25
Sandia Labs., Albuquerque, N.Mex.
Ultrasonic Velocity Determinations in Atj-S Graphite Composite for 70 F to 6100 F.
J. H. Gieske. Feb 75, 18p
Contract AT(29-1)-789

Descriptors: (*Graphite, *Ultrasonic waves), Composite materials, High temperature, Medium temperature, Temperature dependence, Velocity, Very high temperature.

For abstract, see NSA 31 12, number 34038.

UJV-3178-M PC$4.25/MF$2.25
Ustav Jaderneho Vyzkumu, Rez (Czechoslovakia).
Orientation of Basal Plane in Sinter Magnesium-Based Composites.
J. Kuzelka. Nov 74, 23p
In Czech. U.S. Sales Only.

Descriptors: (*Magnesium base alloys, *Extrusion), (*Beryllium alloys, Extrusion), (*Magnesium oxides, Extrusion), (*Magnesium fluorides, Extrusion), Cermets, Composite materials, Cylinders, Grain orientation, Hexagonal lattices, Sintering, Texture, Tubes, X-ray diffraction.

For abstract, see NSA 31 12, number 33891.

WANL-TME-1543 PC$4.00/MF$2.25
Westinghouse Electric Corp., Pittsburgh, Pa. Astronuclear Lab.
Isolation of the zeta Phase in the Tantalum Carbon System.
W. F. Brizes, and J. M. Tobin. Nov 66, 10p

Descriptors: (*Tantalum carbides, *Phase diagrams), Electron probes, Stoichiometry, Thermodynamic properties, Very high temperature, X-ray diffraction.

For abstract, see NSA 31 12, number 33723.

WANL-TMI-721 PC$4.00/MF$2.25
Westinghouse Electric Corp., Pittsburgh, Pa. Astronuclear Lab.
Compression and Bending Tests of Graphite Samples: Wr 41:41:26-10W; Wr 41:41:26-12W; Wr 41:41:26-13W.
J. J. Schreiber. 13 Aug 63, 12p

Descriptors: (*Graphite, *Compression strength), Bending, Cylinders, Deformation, Flexural strength, Mechanical tests, Stresses.

For abstract, see NSA 31 12, number 34043.

WANL-TR-6595 PC$4.00/MF$2.25
Westinghouse Electric Corp., Pittsburgh, Pa. Astronuclear Lab.
Trip Report to Los Alamos Scientific Laboratory, Los Alamos, New Mexico.
A. N. Holden, and R. H. Singleton. 26 Jan 71, 10p

Descriptors: (*Zirconium carbides, *Fabrication), (*Tantalum carbides, Fabrication), (*Niobium carbides, Fabrication), (*Graphite, Fabrication), Composite materials, Physical properties, Zirconium oxides.

For abstract, see NSA 31 12, number 33725.

WANL-TR-6661 PC$4.00/MF$2.25
Westinghouse Electric Corp., Pittsburgh, Pa. Astronuclear Lab.
Trip Report to Abar Corporation, Feasterville, Pennsylvania.
L. H. Cooper. 15 Jul 71, 2p

Descriptors: (*Zirconium carbides, *Leaching), Equipment, Furnaces, Hydrogen.

For abstract, see NSA 31 12, number 33728.

11C. Coating, Colorants, and Finishes

AD-A010 663/3GA PC$3.75/MF$2.25
Watervliet Arsenal N Y
Feasibility of Boriding Alloy Steels at Temperatures below 1000 F,
Vito J. Colangelo, and Bruce A. Fosnocht. Mar 75, 35p Rept no. WVT-TR-75012

Descriptors: *Steel, Coatings, Boron, Borides, Iron compounds, Carbon steels, Temperature, Surface finishing, Diffusion.
Identifiers: *Boriding, Iron borides.

The report concerns the results of a feasibility study that was conducted to determine whether or not alloy steels could be borided to achieve an iron boride layer of .001 to .005 inch at temperatures of 1000 F or lower. The purpose of boriding in this temperature range is to create a wear resistant surface without over-tempering the substrate steel. Results of the study have shown that the alloy steel cannot be borided effectively at temperatures of 1000 F or lower. The study has shown that minimum practical temperatures for .0005 inch boride diffusion are approximately 1100 F for low-carbon steel and 1250 F for alloy steel.

AD-A010 668/2GA PC$3.25/MF$2.25
Frankford Arsenal Philadelphia Pa
An Investigation of a Scratch Method for Testing the Hardness of Anodic Coatings on Aluminum Alloys.
Test rept.,
Walter A. Shebest, and William L. Boyer, Jr. Apr 73, 21p Rept no. FA-T73-5-1

Descriptors: *Anodic coatings, *Test methods, Hardness, Abrasion, Aluminum alloys, Test equipment.

A preliminary study has been made of the relationship between weight losses in a standard abraser test and scratch-hardness tests made on a series of anodic coatings produced on aluminum alloy panels. Tests show that for certain conditions of scratch stylus and test load, a general relationship exists wherein coatings that result in higher weight losses in the abraser tests also yield scratches of greater width in the scratch-hardness test.

AD-A010 831/6GA PC$3.75/MF$2.25
Ocean City Research Corp N J
Laboratory Evaluation of Protective Coatings Intended for Use over Urethane Foam.
Final rept.,
George A. Gehring, Jr. Apr 75, 40p NAEC-ENG-7865
Contract N00156-75-C-2027

Descriptors: *Protective coatings, Asphalt, Plastic coatings, Rubber coatings, Silicones, Acrylic resins, Fiber reinforcement, Polyurethane resins, Vinyl plastics, Acetates, Barrier coatings, Weatherproofing, Cost effectiveness, Laboratory tests, Foam, Impact, Wear resistance, Flammability, Adhesion.

Sprayed-in-place urethane foam is currently used by the Navy to seal deck openings and provide a weather resistant barrier for exposed deck areas on inactive ships. The Navy is now using a fiber-reinforced, asphalt-base coating as a protective topcoat to provide increased waterproofing as well as resistance to photochemical deterioration. Laboratory tests were conducted to evaluate alternate coatings and compare the cost effectiveness of the currently-used asphalt-base coating with alternate coatings. The tests included impact, adhesion, moisture penetration, simulated footwear, flammability, and atmospheric exposure. The report presents the results of the test program. Color illustrations reproduced in black and white.

11D. Composite Materials

AD-A010 722/7GA PC$3.25/MF$2.25
Royal Aircraft Establishment Farnborough (England)
Non-Linear Creep in Glass-Fabric Reinforced Plastics Subjected to Various States of Compound Stress (Nelineinaya Polzuchest Tkanevogo Stekloplastika pri Nekotorykh Vidakh Slozhnogo Napryazhennogo Sostoyaniya),
A. F. Kregers, R. D. Maksimov, and R. P. Turtsinsh. Mar 75, 15p Rept no. RAE-Library-Trans-1824 DRIC-BR-47556
Trans. of Mekhanika Polimerov (USSR) n2 p212-218 1973 by G. H. Kinner.

Descriptors: *Creep, *Reinforced plastics, Shear properties, Alignment, Tension, Compression, Torsion, Translations, USSR.
Identifiers: *Fiberglass reinforced plastics.

Experiments have been carried out on the creep of tubular specimens of glass-fabric reinforced plastics subjected to tension, compression and torsion and the combined action of such loadings. The intrinsic effect of the sign of the normal stress on the onset of shear creep has been shown. The basic rheological parameters of the material were determined and approximated to the experimental curves and a comparison was made between the calculated and experimental results.

AD-A010 863/9GA PC$3.75/MF$2.25
Monsanto Research Corp St Louis Mo
Technical Highlights.
Final technical rept.,
Rolf Buchdahl. Mar 75, 38p
Contract N00014-67-C-0218, ARPA Order-976
See also AD-481 654. Report on Monsanto/Washington Univ., ONR/ARPA Association Project Development of High Performance Composites.

Descriptors: *Composite materials, *Reinforced plastics, *Fiber reinforced composites, Scientific research, Bibliographies.

The report describes the major accomplishments made under the contract. More detailed lists of reports and publications, patents, and degree recipients are appended. The chemistry of silane coupling agents are unraveled enabling improvement of a wide range of coupling agents. In the area of mechanical analysis and characterization, many of the structure-property relations currently used in designing composite structures were developed. With regard to fabrication and processing, basic rheological parameters important in the transfer and injection molding of filled melts were identified and characterized.

AD-A010 882/9GA PC$5.25/MF$2.25
Mcdonnell Aircraft Co St Louis Mo
Electromagnetic Effects of Advanced Composites.
Final rept. 1 May-31 Dec 74,
C. D. Skouby. Jan 75, 113p
Contract N00014-74-C-0200

Descriptors: *Fiber reinforced composites, Electromagnetic shielding, Antennas, Ground level, Graphite, Carbon fibers, Boron, Airframes, Antenna radiation patterns, Composite materials, Effectiveness.
Identifiers: *Graphite reinforced composites, *Boron reinforced composites.

The investigation consisted of an evaluation of the effectiveness of boron and graphite composites as electromagnetic shields and as antenna ground planes. Emphasis was given to the determination of their performance relative to that of metal.

AD-A011 095/7GA PC$3.75/MF$2.25
Princeton Univ N J Dept of Civil and Geological Engineering
A Two-Dimensional Lattice Model for Composites Reinforced with Orthogonal Fibers.
Technical rept.,
H. Demiray, A. C. Eringen, and M. N. L. Narasimhan. May 75, 26p Rept nos. TR-38, RR-75-SM-8
Contract N00014-67-A-0151-0004

Descriptors: *Fiber reinforced composites, *Reinforced plastics, Wave propagation, Shear properties, Tensile properties, Mathematical models.
Identifiers: Lattice dynamics.

A two-dimensional lattice dynamics model for a composite reinforced with two sets of orthogonally interlocking fibers is given, and the propagation of plane harmonic waves in such a medium is investigated. The composite considered consists of two sets of orthogonal equivalent elastic fibers and a matrix material whose elastic properties are different from those of the fibers. The dispersion relations of waves propagating in the medium are studied and various special cases are investigated.

AD-A011 112/0GA PC$4.25/MF$2.25
Pennsylvania State Univ University Park Applied Research Lab
Effect of Metallic-Reinforcement on the Stress Concentrations around a Circular Penetration in a Fiber-Reinforced Rectangular Plate.
Technical memo.,
Frank M. Giglio. 18 May 73, 62p Rept no. TM-73-114
Contract N00017-70-C-1407
Master's thesis.

Descriptors: *Fiber reinforced composites, *Stress analysis, Finite element analysis, Reinforcement(Structures), Rings, Reinforcing materials, Plates, Aluminum alloys, Stress concentration, Steel, Holes(Openings), Shear stresses, Theses.
Identifiers: Aluminum alloy 6061, Steel 304L.

The effect of metallic ring-reinforcement on the stress fields surrounding a circular penetration in unipanel and crossply plates was investigated. Aluminum and stainless steel reinforcements were employed and the plates were subjected to both uniaxial and biaxial stress states. Stresses at the interface of the reinforcing ring and composite plate were generated using the finite element method. Numerical results were verified by photoelastic experimentation. For the uniaxially applied loading case, ring-reinforcement resulted in both a reduction and shift in location of peak maximum and minimum principal stress concentrations and peak maximum shear stress concentrations. For the biaxially loaded plates, the use of reinforcing rings resulted in higher peak maximum principal stress concentrations and lower peak minimum principal and maximum shear stress concentrations. In general, the use of either aluminum or steel reinforcement resulted in little difference in stress concentrations around the penetration except for the maximum principal stress concentrations in the biaxially loaded plates.

N75-21373/6GA PC$3.25/MF$2.25
National Aeronautics and Space Administration. Lewis Research Center, Cleveland, Ohio.
Analytical Displacements and Vibrations of Cantilevered Unsymmetric Fiber Composite Laminates.
M. D. Minich, and C. C. Chamis. 1975, 13p
NASA-TM-X-71699, E-8306
Conf-Prepared for Presentation at 16TH Struct., Structural Dyn. And Mater. Conf., Denver, 27-29 May 1975; Sponsored by Aiaa, Asme and Sae.

Descriptors: *Cantilever plates, *Laminates, *Vibration tests, Airfoils, Composite structures, Dynamic structural analysis, Finite element method.

For abstract, see STAR 1313

N75-21374/4GA PC$7.00/MF$2.25
United Aircraft Corp., East Hartford, Conn. Research Labs.
Design, Fabrication and Test of Multi-Fiber Laminates.
R. A. Pike, and R. C. Novak. Jan 75, 190p NASA-CR-134763, R75-911730-15
Contract NAS3-17778

Descriptors: *Fabrication, *Laminates, *Mechanical properties, *Structural design, Charpy impact test, Epoxy resins, Fiber strength, Graphite, Polyimide resins, Polyquinoxalines, S glass.

For abstract, see STAR 1313

11E. Fibers and Textiles

AD-A010 990/0GA PC$3.25/MF$2.25
Wisconsin Univ Madison Mathematics Research Center
On the Extension of Elastic Two-Ply Filament Yarns.
Technical summary rept.,
N. C. Huang. Mar 75, 21p Rept no. MRC-TSR-1518
Contract DA-31-124-ARO(D)-462

Descriptors: *Yarns, *Elastic properties, Stresses, Mathematical analysis.
Identifiers: Filament yarns.

The paper deals with the small extension of linearly elastic two-ply filament yarns. Analysis is based on the linear theory of slender curved rods. The yarn elongation and the filament stress are determined for yarns with various helical angles. The effect of the superposition of a twisting moment on the axial extension is also investigated.

PATENT-3 800 375 Not available NTIS
Department of Agriculture, Washington, D.C.
Cross Dyeing Fiber Blends of Polyurethane, Polyacrylate or Butadiene-Acrylonitrile Copolymer Coated Cotton Fibers with Disperse and Reactive Dyes.
Patent,
Robert J. Harper, Jr., Eugene J. Blanchard, John T. Lofton, and Gloria A. Gautreaux. Filed 5 Nov 71, patented 2 Apr 74, 6p PAT-APPL-196 210,
Government-owned invention available for licensing. Copy of patent available Commissioner of Patents, Washington, D.C. 20231 $0.50.

Descriptors: *Patents, *Dyeing, *Yarns, Disperse dyes, Fabrics, Cotton fabrics, Cellulose.
Identifiers: PAT-CL-28-72-16.

The patent describes a process which has been developed for cross-dyeing cellulosic fabrics. This process consists of weaving certain polymer treated or polymer and crosslinking agent treated yarns into a fabric. Then the fabric is dyed with a disperse dye and a cotton dye. The polymer treated yarns are dyed with a disperse dye while the nonpolymer treated yarns are dyed with the cotton dye. This yields a cross-dyed fabric. The polymer treated yarns used in weaving are produced either by direct treatment, skein treatment or by knitting a fabric, treating the knit, deknitting and using these yarns in weaving.

PATENT-3 849 067 Not available NTIS
Department of Agriculture, Washington, D.C.
Process for the Mercerization of Cotton Fabrics with Liquid Ammonia and Ammonia/Amine Solutions.
Patent,
Timothy A. Calamari, Jr., Wilson A. Reeves, Sidney P. Schreiber, and Albert S. Cooper, Jr. Filed 7 May 71, patented 19 Nov 74, 6p PAT-APPL-141 359,
Government-owned invention available for licensing. Copy of patent available Commissioner of Patents, Washington, D.C. 20231 $0.50.

Descriptors: *Patents, *Mercerizing, *Liquid ammonia, Cotton fabrics.
Identifiers: PAT-CL-8-115-7.

The patent describes the production of woven and knit cotton fabrics with improved strength, smooth drying appearance, dimensional stability, abrasion resistance, and hand by rapid and continuous tension mercerization with liquid ammonia using an improved chainless mercerizer.

PATENT-3 853 459 Not available NTIS
Department of Agriculture, Washington, D.C.
Process for Dyeing Crosslinked Cellulosic Fabrics with Disperse Dyestuffs.
Patent,
Robert J. Harper, Jr., Eugene J. Blanchard, John T. Lofton, and Gloria A. Gautreaux. Filed 5 Nov 71, patented 10 Dec 74, 7p PAT-APPL-196 211,
Government-owned invention available for licensing. Copy of patent available Commissioner of Patents, Washington, D.C. 20231 $0.50.

Descriptors: *Patents, *Disperse dyes, *Dyeing, *Crosslinking, Cotton fabrics, Cellulose.
Identifiers: PAT-CL-8-18.

The patent concerns a process for the dyeing of cellulose fabrics subsequent to crosslinking. It also allows cellulosic fabrics to be dyed with disperse dyestuffs. This process consists of the treatment of a fabric with crosslinking agent and a suitable polymer. This was followed by dyeing the fabric with a disperse dyestuff.

Blended fabrics can be dyed with a single class of dye under relatively mild conditions.

PATENT-3 854 866 Not available NTIS
Department of Agriculture, Washington, D.C.
Recurable Crosslinked Cellulose Fabrics from Methylol Reagents and Polycarboxylic Acids and Method of Making.
Patent,
William E. Franklin, and Stanley P. Rowland.
Filed 16 Oct 72, patented 17 Dec 74, 9p PAT-APPL-298 167,
Supersedes PB-230 253.
Government-owned invention available for licensing. Copy of patent available Commissioner of Patents, Washington, D.C. 20231 $0.50.

Descriptors: *Patents, *Durable press treating, *Catalysts, *Crosslinking, Polybasic organic acids, Cellulose.
Identifiers: PAT-CL-8-116-R.

The patent concerns the durable press treating of cellulosic fabrics with formulations containing methylol crosslinking reagents and polycarboxylic acids having three or more acidic groups per molecule. The treated fabrics are cured in a flat configuration and washed. The fabric is subsequently heated in a folded configuration whereby the folded or creased configuration is permanently imparted to the fabric. A metal salt activating catalyst included in the formulation of the textile treating solution decreases the time required to form sharp, permanent creases in the cured fabrics.

11F. Metallurgy and Metallography

AD-A010 543/7GA PC$3.75/MF$2.25
United States Steel Corp Monroeville Pa Research Lab
The Effect of Hydrostatic Pressure on the Deformation Behavior of Maraging and HY-80 Steels and Its Implications for Plasticity Theory.
Final rept. 1 Mar 74-1 Mar 75,
William A. Spitzig, Robert J. Sober, and Owen Richmond. Apr 75, 43p Rept no. 76-H-006(064)-75
Contract N00014-73-C-0092
See also report dated May 74, AD-780 932.

Descriptors: *Steel, *Plastic deformation, Hydrostatic pressure, Maraging steels, Yield strength, Expansion, Shear properties, Tensile properties, Compressive properties.
Identifiers: Steel HY-80.

Earlier results showed that the difference between the tensile and compressive strengths of tempered martensites is primarily a manifestation of the general pressure dependence of flow stress in these materials. However, the same results also showed that the volume expansion after deformation was much smaller than that predicted by the normality flow rule of plasticity theory for materials with such pressure dependence. Additional results now obtained on maraging and HY-80 steels support these conclusions. The results for all these materials exhibit a strong, but not perfect, correlation between pressure dependence, yield stress, and volume expansion. The results suggest that an appropriate plasticity model would be one in which the octahedral shear is linearly dependent on the mean pressure, but the volume change is negligible in violation of the normality flow rule. Such a model has been proposed previously for the plastic deformation of soils.

AD-A010 548/6GA PC$3.25/MF$2.25
Illinois Univ Urbana Dept of Metallurgy and Mining Engineering
Ion Microprobe Analysis for Niobium Hydride in Hydrogen Embrittled Niobium.
Technical rept.,
Howard K. Birnbaum, Martin L. Grossbeck, Peter Williams, and Charles A. Evans, Jr. Apr 75, 12p
Contract N00014-67-A-0305-0020

Descriptors: *Niobium, *Hydrogen embrittlement, *Fracture(Mechanics), Hydrides, Stresses, Electron microscopy, Surfaces, Electron diffraction, Precipitation.
Identifiers: Niobium hydrides, Ion microprobes.

Hydrogen embrittled niobium samples have been examined in an ion microprobe to verify the mechanism of embrittlement by stress induced precipitation of hydride. A fractured Nb-2 at.% H sample was examined in detail. Mass analyzed images of the fracture region of the sample were obtained using Nb(+), NbH(+), H(+), and NbO(+) ions. The images clearly demonstrate the presence of a hydrogen-rich phase at the fracture site. NbH(+)/Nb(+) ratios at the fracture site and away from it appear characteristic of niobium hydride and Nb-H solid solution respectively. Scanning electron microscope and electron diffraction studies together with the ion microprobe analysis provide strong evidence in support of the theory of hydrogen embrittlement by stress-induced precipitation of niobium hydride.

AD-A010 675/7GA PC$3.25/MF$2.25
Michigan Technological Univ Houghton Dept of Metallurgical Engineering
Analysis of the Composition of Alpha sub 1 Plates Precipitated from beta' Cu-Zn Using Analytical Electron Microscopy.
Rept. no. 7,
G. W. Lorimer, G. Cliff, H. I. Aaronson, and K. R. Kinsman. 10 Dec 74, 11p ARO-11264.6-MC
Grant DA-ARO-D-31-124-73-G144
Availability: Pub. in Scripta Metallurgica, v9 n3 p271-279 1975.

Descriptors: *Copper alloys, *Zinc alloys, *Chemical composition, Chemical precipitation,, Electron microscopy, Diffusion, Crystal growth, Bainite, Metal plates, Martensite, Reprints.

The composition of alpha sub 1 plates in a Cu-40.5% Zn alloy isothermally reacted at 335 C was determined as a function of reaction time by means of an analyzing electron microscope, EMMA-4. This instrument is capable of determining accurately the composition of crystals whose minimum dimension is as small as 500-1000 angstroms. At all stages of growth which could be studied with this instrument, the Zn content of the alpha sub 1 plates is markedly less than that of the beta matrix. thus, despite the fact that these plates have been shown to exhibit the crystallography, surface relief effect and internal structure characteristic of martensite, they must have formed by a diffusional growth mechanism, rather than by one of shear. This finding supports the view that the crystallography and surface relief effects characteristic of martensite are a necessary but not a sufficient condition for identification of the reaction mechanism as shear.

AD-A010 697/1GA PC$3.25/MF$2.25
Catholic Univ of America Washington D C Inst of Ocean Science and Engineering
Cavitation Erosion-Corrosion Modeling,
Terence McGuinness, and A. Thiruvengadam. 1974, 21p
Contract N00014-67-A-0377-0008
Availability: Pub. in American Society for Testing and Materials, Rept. no. ASTM-STP-567 dated 1974, p30-50.

Descriptors: *Cavitation corrosion, *Ship structural components, Erosion, High strength alloys, Steel, Aluminum alloys, Sea water, Distilled water, Experimental data, Reprints.
Identifiers: Cavitation erosion, Steel HY-130, Steel HY-80, Steel SAE 1020, Aluminum alloy 5086 H117.

Due to the increased occurrence of cavitation erosion in hydrodynamic systems operating in an ocean environment, there is a need to study the role of corrosion on the process of cavitation erosion. Previously, for noncorrosive systems, correlation of experimental data with the theory of erosion resulted in a time-scale modeling law of erosion. The changes in this scaling law due to corrosion were then investigated. A high-frequency, 20 Khz, piezoelectric vibratory apparatus was employed to generate erosion time history data for HY-130, HY-80, SAE 1020 steels, and Al 5086 H117 at several different erosion intensities in sea and distilled water. Results indicated that the relative erosion rate curves for materials susceptible to corrosion were different, and that the changes due to corrosivity increased with increasing erosion intensities. By coupling changes in corrosivity with maximum erosion rate increases, and times to the maximum rates, it is possible to make prototype performance predictions for either seawater or distilled water conditions. Qualitative relationships were found between the relative erosion rates and galvanic potentials of tested materials. A mechanism was proposed to account for the corrosive influence on erosion based on hydrogen-generated micropit destruction of a material surface that accelerates cavitation erosion. (Author)

AD-A010 721/9GA PC$3.25/MF$2.25
Royal Aircraft Establishment Farnborough (England)
The Fatigue Strength of an Aluminum Alloy in Petroleum Jet Fuels at Various Temperatures (Takticheskaya Prochnost Alyuminievogo Splava v Neftyanykh Reaktivnykh Toplivakh pri Razlichnykh Temperaturakh),
A. V. Karlashov, and I. I. Pryakhin. Mar 75, 10p Rept no. RAE-Library-Trans-1840 DRIC-BR-47456
Trans. of Fiziko-Khimicheskaya Mekhanika Materialov (USSR) v10 n1 p24-27 1974 by G. H. Kinner.

Descriptors: *Aluminum alloys, Fatigue(Mechanics), Jet engine fuels, Aircraft engines, Jet engines, Fuel systems, Translations, USSR.

As many aircraft power plant and fuel system components are currently made from aluminum alloys, the authors have made a study of the fatigue strength of such alloys exposed to jet fuels at various temperatures. It was found that the fatigue strength of D16A-T aluminum alloy at 20C is somewhat lower in petroleum fuels than in air. In addition, the fatigue strength of the alloy decreased with increase in fuel temperature.

AD-A010 840/7GA PC$3.25/MF$2.25
Florida Univ Gainesville Dept of Materials Science and Engineering
Concerning the Mechanics of Type-A Portevin-Le Chatelier Plastic Flow Initiation in Al 6061,
R. E. Reed-Hill, and A. S. Gulec. 17 Jun 74, 8p ARO-9826.12-MC
Grant DA-ARO-D-31-124-72-G70
Availability: Pub. in Metallurgical Transactions A, v6A p461-466 Mar 75.

Descriptors: *Aluminum alloys, *Strain rate, *Plastic flow, Mechanical properties, Reprints.
Identifiers: *Aluminum alloy 6061.

The mechanics involved in the development of type-A Portevin-Le Chatelier plastic flow in Al 6061 alloy tensile specimens were investigated using strain differential measurements. Specimens with tapered as well as uniform diameter gage sections were used. In the former the Luders bands tend to move into a negative strain gradient, while in the latter they move into a positive gradient. In both cases

plastic instability leads to strain rate fluctuations that grow catastrophically into the Luders phenomena. Once formed the bands tend to move under a stress increment that is nearly independent of the strain and only weakly dependent on strain rate. The near constancy of the stress required to drive the bands can account for the increase in Luders strain, delta epsilon sub L, with increasing number of band passages, and the fact that delta epsilon sub L increases as a band moves into a positive strain gradient, while it decreases when it moves into a negative gradient. (Author)

AD-A010 859/7GA PC$3.75/MF$2.25
Washington Univ Seattle Dept of Mechanical Engineering
Fracture Dynamics of Wedge-Loaded DCB Specimen.
Interim rept.,
A. S. Kobayashi, S. Mall, and M. H. Lee. Apr 75, 28p Rept no. TR-21
Contract N00014-67-A-0103-0040

Descriptors: *Fracture(Mechanics), *Photoelasticity, Test methods, Wedges, Dynamic loads, Crack propagation, Notch toughness, Steel, Finite element analysis.
Identifiers: Stress intensity factor, Strain energy methods, Fracture toughness, Steel Homalite-100.

Dynamic photoelasticity was used to analyze the Battelle-type wedge-loaded DCB specimen machined from Homalite-100 sheets of 3/8-inch (9.5mm) thickness. Dynamic stress intensity factors, dynamic strain energy release rate, crack velocities of straight and curved crack were determined. Corresponding static stress intensity factors were calculated by the method of finite element analysis. These results were compared against Kanninen's analytical results and experimental results by Hahn et al., using steel specimen. While dynamic photoelasticity results show qualitative agreement with Kanninen's results, the two differ in detail.

AD-A010 885/2GA PC$4.25/MF$2.25
Pittsburgh Univ Pa Dept of Metallurgical and Materials Engineering
The Structure and Mechanical Properties of Internally Oxidized Cu-Ti Polycrystals.
Technical rept.,
James Greggi, William A. Soffa, and Gerald H. Meier. 19 May 75, 55p Rept no. ME-IO-75-3
Contract N00014-75-C-0747

Descriptors: *Copper alloys, *Dispersion hardening, Titanium alloys, Oxidation, Internal, Grain structures(Metallurgy), Microstructure, Mechanical properties.

The structure and mechanical properties of internally oxidized Cu-Ti polycrystals was studied for a range of Ti concentrations and oxidation temperatures. The average TiO2 particle size varied from 76 A for Cu-0.25 wt% Ti oxidized at 750 C to 370 A for Cu-1.0 wt% Ti oxidized at 1000 C. For oxidation temperatures above 850 C the TiO2 particles had the rutile crystal structure and below 800 C the anatase structure. Between 800 and 850 C the two structures were found to coexist. Orientation relationships with the Cu matrix were found and evaluated for both rutile and anatase particles. The TiO2 dispersion was found to markedly increase the yield strength of Cu and the yield strength data were found to agree well with the predictions of a modified Orowan theory. The alloys exhibited considerable elongation despite the fact that fracture was associated with oxide particles on the grain boundaries.

AD-A010 886/0GA PC$4.25/MF$2.25
Pittsburgh Univ Pa Dept of Metallurgical and Materials Engineering
Structure and Properties of Cast Alloys: (1) The Growth and Thermal Stability of Unidirectionally Solidified Nb-Nb2C Composites; (2) Structure and Properties of Cast Nonferrous Alloys.
Interim rept.,
Stan A. David, and Harold D. Brody. Feb 75, 52p Rept no. SETEC-MM-75-022
Contract N00014-75-C-0800

Descriptors: *Casting alloys, *Composite materials, *Solidification, Niobium alloys, Fiber metallurgy, Niobium compounds, Carbides, Zone melting, Casting, Eutectics, Thermal stability, Microstructure, Aluminum alloys, Copper alloys, Titanium alloys, Dendritic structure, Castings.
Identifiers: *Metal matrix composites, Eutectic composites, Oriented fiber composites.

By a floating zone melting and freezing technique, eutectic and hyper-eutectic Nb-Nb2C alloys may be grown with well aligned two phase composite structures. The morphology of the carbide phase may be rod-like, plate-like or a combination of rods and plates depending on the growth rate and carbon content. The rod spacing or plate-spacing is a function of growth rate. The structural stability of as grown rod-like Nb-Nb2C composites grown at two different growth rates and the stability of deformed Nb-Nb2C composites have been examined after isothermal annealing at temperatures in excess of one half the eutectic temperature for periods up to 700 hrs. In part two, aspects of cast structure, including interfaces, segregation, particles, and discontinuities, are discussed in relation to their dependence on casting conditions and in relation to their effect on properties.

AD-A010 894/4GA PC$3.25/MF$2.25
Michigan Technological Univ Houghton
Thickening Kinetics of Proeutectoid Ferrite Plates in Fe-C Alloys,
K. R. Kinsman, E. Eichen, and H. I. Aaronson. 29 Apr 74, 16p ARO-11264.4-MC
Grant DA-ARO-D-31-124-73-G144
Availability: Pub. in Metallurgical Transactions A, v6A p303-317 Feb 75.

Descriptors: *Iron alloys, *Carbon steels, *Ferrites, Eutectics, Precipitation, Grain growth, Reprints.

AD-A011 055/1GA PC$3.25/MF$2.25
Washington Univ Seattle Dept of Mechanical Engineering
Criteria for Crack Branching and Crack Arrest.
Technical rept.,
A. S. Kobayashi. Sep 74, 18p Rept no. TR-19
Contract N00014-67-A-0103-0040

Descriptors: *Fracture(Mechanics), *Photoelasticity, Crack propagation, Stresses, Dynamic tests, Strain(Mechanics), Steel, Impact tests, Mathematical analysis.
Identifiers: Strain energy.

Dynamic photoelastic data on crack branching and crack arrest in edge-cracked tension plates with and without reinforcing stringers were re-evaluated and the averaged static and dynamic strain energy release rates, G ave and G sub D ave were determined. It was found that when G sub D ave > G sub c, which is the critical strain energy release rate, the crack would continue to run although the instantaneous static strain energy release rate, G, could be less than G sub c. Likewise, the crack arrested when G sub D ave divided by G sub c and G < G sub c. Crack branching occurred when G ave = or > 5 G sub D ave. For a running crack initiated by projectile impact, the current impact energy after dissipation must be estimated if its influence is to be incorporated in the above crack arrest and crack branching criteria.

AECL-4669 PC$4.00/MF$2.25
Atomic Energy of Canada Ltd., Pinawa, Manitoba. Whiteshell Nuclear Research Establishment.
Structures of as-Melted and Heat Treated Zr sub 3 al-Based Alloys.
D. J. Cameron. Nov 74, 39p
U.S. Sales Only.

Descriptors: (*Zirconium base alloys, *Microstructure), (*Aluminium alloys, Microstructure), Casting, Heat treatments, Phase transformations, Precipitation.

For abstract, see NSA 31 12, number 33860.

AECL-5020 PC$4.00/MF$2.25
Atomic Energy of Canada Ltd., Chalk River, Ontario. Chalk River Nuclear Labs.
Effect of Cooling Rate on the Structure of a Solution-Treated Zirconium--8.6 Wt.% Aluminum Alloy.
E. M. Schulson, and D. H. McColl. Dec 74, 18p
U.S. Sales Only.

Descriptors: (*Zirconium base alloys, *Microstructure), (*Aluminium alloys, Microstructure), Binary alloy systems, Cooling, Crystal growth, Grain size, Heat treatments, Intermetallic compounds, Phase transformations, Time dependence.

For abstract, see NSA 31 12, number 33861.

AERE-TP-590 PC$4.00/MF$2.25
UKAEA Research Group, Harwell. Atomic Energy Research Establishment.
Nucleation and Early Growth of Interstitial Dislocation Loops in Irradiated Materials.
M. R. Hayns. 1973, 26p
U.S. Sales Only.

Descriptors: (*Interstitials, *Nucleation), (*Graphite, *Physical radiation effects), (*Stainless steel-316, Physical radiation effects), Cold working, Dislocations, Equations, Radiation doses, Temperature dependence.

For abstract, see NSA 31 12, number 33991.

BNL-19551 PC$4.25/MF$2.25
Brookhaven National Lab., Upton, N.Y.
Magnetic Excitations in Rare Earth A1 sub 2 Compounds.
P. Bak. Dec 74, 22p CONF-741202-17

Descriptors: (*Aluminium alloys, *Magnetic properties), (*Neodymium alloys, Magnetic properties), (*Terbium alloys, Magnetic properties), Binary alloy systems, Crystal field, Excitons, Interactions, Intermetallic compounds, Isotropy, Magnons, Neutrons, Scattering, Spectra, Ultralow temperature.

For abstract, see NSA 31 12, number 33865.

BNL-50434 PC$4.00/MF$2.25
Brookhaven National Lab., Upton, N.Y.
Computational Method for the Evaluation of Radiation Effects Produced by Ctr-Related Neutron Spectra.
D. M. Parkin, and A. N. Goland. Sep 74, 41p
Contract AT(30-1)-16

Descriptors: (*Thermonuclear reactor walls, *Physical radiation effects), (*Thermonuclear reactions, *Neutron spectra), (*Niobium, Physical radiation effects), (*Vanadium, Physical radiation effects), Aluminium, Carbon, Cross sections, Neutron reactions, Neutron sources, Simulation, Titanium.

For abstract, see NSA 31 12, number 33992.

CEA-CONF-2675 PC$4.00/MF$2.25
CEA Centre d'Etudes Nucleaires de Saclay, 91 - Gif-surrYvette (France). Section de Recherches de Metallurgie Physique.
Solute Effects on Solvent Electromigration in Dilute Alloys.
N. V. Doan, and J. L. Bocquet. 1973, 20p CONF-740827-4
U.S. Sales Only.

Descriptors: (*Silver base alloys, *Electrophoresis), (*Zinc alloys, Electrophoresis), (*Cadmium alloys, Electrophoresis), (*Aluminium base alloys, Electrophoresis), Bcc lattices, Binary alloy systems, Diffusion, Dilute alloys, Fcc lattices, Films, Self-diffusion, Thickness, Copper alloys.

For abstract, see NSA 31 12, number 33867.

COM-75-50322/7GA Not available NTIS
National Bureau of Standards, Washington, D.C.
Technique for Preparing Homogeneous Bulk Samples of Concentrated Alloys.
Final rept.,
J. W. Ekin, and V. A. Deason. Mar 75, 2p
Pub. in Review of Scientific Instruments, Notes v46 n3 p327-328 Mar 75.

Descriptors: *Casting, *Aluminum alloys, Magnesium containing alloys, Quenching(Cooling), Solidification.
Identifiers: Reprints.

A technique has been developed for casting relatively large samples (approximately 100g) of concentrated alloys. It was used to prepare Al-Mg castings having Mg concentrations near the limit of solid solubility. Concentration gradients and nonequilibrium eutectic solidification were minimized by the rapid cooling and directional solidification that are characteristic of the technique.

COM-75-50331/8GA Not available NTIS
National Bureau of Standards, Washington, D.C.
Thermodynamics of Dislocation Motion in Multiaxial Stress Fields.
Final rept.,
Roger B. Clough, and John A. Simmons. 1975, 18p
Pub. in Proceedings from the John E. Dorn Symposium, Cleveland, Ohio. Oct 72: Paper in Rate Processes in Plastic Deformation of Materials, p266-283 1975.

Descriptors: *Plastic deformation, *Metals, Dislocations(Materials), Stresses, Yield strength, Tensor analysis, Temperature.
Identifiers: Reprints.

This paper presents a first-order consideration of dislocation motion through a multiaxial stress field. The concept of plastic power dissipation is developed as a measure of plastic deformation under multiaxial stresses. A result which emerges is the concept of the second order activation volume tensor for plastic power dissipation. Results are given for the biaxial yield surface calculated as a surface of constant plastic power dissipation. The yield surface varies from a Tresca to a von Mises criterion depending on the scalar activation volume, the uniaxial yield stress, and the temperature. Generally for low temperature conditions the yield surface resembles the Tresca yield surface, and its shape approaches the von Mises shape as a high temperature limit. The activation volume is explicitly demonstrated for all materials with a von Mises-like yield surface in any multiaxial stress state. Extension of this treatment to include the internal stress and prestrain and stress history effects on the yield surface is discussed.

CONF-740997-1 PC$4.00/MF$2.25
Argonne National Lab., Ill.
Critical Current Changes in Low Temperature Fast Neutron Irradiated Niobium.
B. S. Brown. 1974, 7p

Descriptors: (*Niobium, *Physical radiation effects), Critical current, Critical field, Crystal defects, Fast neutrons, Interstitials, Superconductivity, Type-ii superconductors, Vacancies.

For abstract, see NSA 31 12, number 33993.

COO-2305-2 PC$4.00/MF$2.25
Connecticut Univ., Storrs Dept. of Metallurgy.
Electron-Dislocation Interactions at Low Temperatures.
J. M. Galligan. 7p
Contract AT(11-1)-2305

Descriptors: (*Lead alloys, *Dislocations), (*Tin alloys, Dislocations), (*Lead, Dislocations), (*Indium alloys, Dislocations), Flow stress, Interstitials, Niobium, Superconductivity, Ultralow temperature.

For abstract, see NSA 31 12, number 33868.

COO-3166-16 PC$4.00/MF$2.25
Cornell Univ., Ithaca, N.Y. Materials Science Center.
Environment and Fracture. Technical Progress Report.
H. H. Johnson. 6 Mar 75, 14p
Contract AT(11-1)-3166

Descriptors: (*Iron, *Sorptive properties), (*Hydrogen, *Diffusion), Deuterium, Dislocations, Electrochemistry, Environment, Fracture properties, Impurities, Permeability, Solubility, Trapping.

For abstract, see NSA 31 12, number 35710.

EURFNR-1195 PC$5.00/MF$2.25
Kernforschungszentrum Karlsruhe (F.R. Germany). Inst. fuer Material- und Festkoerperforschung.
Description of the Creep Curves of Two Austenitic Steels from Creep Rupture Tests with Constant Load Increase Rate.
L. Schaefer, and K. D. Closs. Apr 74, 39p
Translation of KFK--1963.

Descriptors: (*Chromium-nickel steels, *Creep), Austenite, Physical radiation effects, Ruptures, Stresses, Time dependence, Tubes.

For abstract, see NSA 31 12, number 33869.

HEDL-TME-75-20 PC$5.45/MF$2.25
Hanford Engineering Development Lab., Richland, Wash.
Effect of Stress Ratio Upon the Elevated Temperature Fatigue-Crack Growth Behavior of Several Reactor Structural Materials.
L. A. James. Feb 75, 45p
Contract AT(45-1)-2170

Descriptors: (*Stainless steel-304, *Fracture properties), (*Stainless steel-316, Fracture properties), (*Inconel 600, Fracture properties), (*Inconel 718, Fracture properties), Correlations, Cracks, Fatigue, High temperature, Incoloy 800, Medium temperature, Reactor materials, Steel-astm-a533-b, Stresses.

For abstract, see NSA 31 12, number 33872.

IS-T-658 PC$6.75/MF$2.25
Ames Lab., Iowa.
Effect of Hydrogen on the Creep Properties of Vanadium, Niobium, and Molybdenum.
J. C. Mather. Feb 75, 73p
Contract W-7405-eng-82

Descriptors: (*Niobium, *Creep), (*Vanadium, Creep), (*Molybdenum, Creep), (*Hydrogen, *Corrosive effects), High temperature, Stresses, Temperature dependence, Very high temperature.

For abstract, see NSA 31 12, number 33874.

IS-T-661 PC$6.00/MF$2.25
Ames Lab., Iowa.
Single Crystalline Elastic Constants of al sub 2 Cu and Zr sub 2 Ni.
F. R. Eshelman. Feb 75, 58p
Contract W-7405-eng-82

Descriptors: (*Aluminium alloys, *Elasticity), (*Copper alloys, Elasticity), (*Zirconium alloys, Elasticity), (*Nickel alloys, Elasticity), Binary alloy systems, Compression, Debye temperature, Intermetallic compounds, Low temperature, Medium temperature, Monocrystals, Pulse techniques, Shear, Temperature dependence, Ultralow temperature, Very low temperature, Young modulus.

For abstract, see NSA 31 12, number 33875.

IS-T-662 PC$5.25/MF$2.25
Ames Lab., Iowa.
Thermodynamic Study of Phase Stability in the Thorium--Copper Equilibrium System.
D. M. Bailey. Feb 75, 45p
Contract W-7405-eng-82

Descriptors: (*Thorium alloys, *Phase diagrams), (*Copper alloys, Phase diagrams), Calcium fluorides, Electrochemistry, Electrolytes, Enthalpy, Formation free energy, Thermodynamics.

For abstract, see NSA 31 12, number 33876.

N75-21313/2GA PC$4.25/MF$2.25
Battelle Columbus Labs., Ohio.
Process Development for Producing Fine-Grain Casting in Space.
Final Report.
S. H. Gelles, and R. K. Malik. 10 Apr 75, 68p
NASA-CR-120739
Contract NAS8-29626

Descriptors: *Beryllium, *Ingots, *Low gravity manufacturing, *Microstructure, Aerospace engineering, Beryllium oxides, Space tools, Technology utilization.

For abstract, see STAR 1313

N75-21430/4GA PC$3.25/MF$2.25
Cornell Univ., Ithaca, N.Y. Lab. of Atomic and Solid State Physics.
Aluminum under High Pressure: 1 Equation of State.
C. Friedli, and N. W. Ashcroft. 1975, 24p NASA-CR-142617, REPT-6
Contract NGR-33-010-180

Descriptors: *Aluminum, *Equations of state, *High pressure, Electron scattering, Face centered cubic lattices, Ion recombination, Single crystals, Thermoelasticity.

For abstract, see STAR 1313

N75-21431/2GA PC$11.50/MF$2.25
McDonnell-Douglas Astronautics Co., St. Louis, Mo.
Prediction and Verification of Creep Behavior in Metallic Materials and Components, for the Space Shuttle Thermal Protection System. Volume 1, Phase 1: Cyclic Materials Creep Predictions.
J. W. Davis, and B. A. Cramer. Nov 74, 453p
NASA-CR-132605-1
Contract NAS1-11774

Descriptors: *Creep analysis, *Heat resistant alloys, *Heat shielding, *Space shuttles, *Thermal protection, Aerodynamic heating, Loads (Forces), Stress concentration, Temperature profiles.

For abstract, see STAR 1313

N75-21432/0GA PC$3.75/MF$2.25
Kanner (Leo) Associates, Redwood City, Calif.
Effect of Titanium, Boron and Molybdenum on the Structure of Austenitic 18/10 Steel after Solution Heat Treatment and Sensitization.
Z. Bojarski, W. Czyrski, J. Eysmontt, and H. Serwicki. 3 Mar 75, 34p NASA-TT-F-16172
Contract NASW-2481
Tran-Transl. Into English from Prace Inst. Hunticzych (Ussr), V. 23, No. 1, 1971 p 9-23.

Descriptors: *Annealing, *Austenitic stainless steels, *Heat treatment, *Microstructure, Boron, Molybdenum, Precipitation (Chemistry), Titanium.

For abstract, see STAR 1313

N75-21433/8GA PC$3.75/MF$2.25
National Aeronautics and Space Administration. Lyndon B. Johnson Space Center, Houston, Tex.
Environmental Crack-Growth Behavior of High Strength Pressure Vessel Alloys.
R. G. Forman. Apr 75, 43p NASA-TN-D-7952, JSC-S-423

Descriptors: *Crack initiation, *Environmental tests, *High strength alloys, *Pressure vessels, Fracture mechanics, Metal fatigue, Nondestructive tests.

For abstract, see STAR 1313

N75-21434/6GA PC$3.75/MF$2.25
National Aeronautics and Space Administration. Marshall Space Flight Center, Huntsville, Ala.
Kinetic Studies of the Stress Corrosion Cracking of D6ac Steel.
P. J. Noronha. 25 Mar 75, 27p NASA-TM-X-64923

Descriptors: *Cracking (Fracturing), *High strength steels, *Stress corrosion, Crack propagation, Creep tests, Fracture strength, Kinetics, Load tests, Salt spray tests, Toughness.

For abstract, see STAR 1313

N75-21563/2GA PC$5.75/MF$2.25
Oak Ridge National Lab., Tenn.
Evaluation of T-111 Forced-Convection Loop Tested with Lithium at 1370 C.
J. H. Devan, and E. L. Long, Jr.. Apr 75, 133p NASA-CR-134745, ORNL-TM-4775
NASA ORDER C-54555-B, Contract W-7405-ENG-26

Descriptors: *Forced convection, *Free convection, *High temperature research, *Lithium, *Tantalum alloys, Flow velocity, Hafnium, Mass transfer, Nitrogen, Tensile strength.

For abstract, see STAR 1313

PAT-APPL-509 990/GA PC$3.25/MF$2.25
Energy Research and Development Administration, Washington, D.C.
High Temperature Aqueous Stress Corrosion Testing Device.
Patent Application,
Arthur N. Bornstein, and Maurice E. Indig. Filed 27 Sep 74, 14p
Government-owned invention available for licensing. Copy of application available NTIS.

Descriptors: *Test equipment, *Stress corrosion tests, *Patent applications, Stressing.
Identifiers: PAT-CL-73-97.

The patent application describes a device for stressing tensile samples contained within a high temperature, high pressure aqueous environment, thereby permitting determination of stress corrosion susceptibility of materials in a simple way. The stressing device couples an external piston to an internal tensile sample via a pull rod, with stresses being applied to the sample by pressurizing the piston. The device contains a fitting/seal arrangement including Teflon and weld seals which allow sealing of the internal system pressure and the external piston pressure. The fitting/seal arrangement allows free movement of the pull rod and the piston.

PATENT-3 859 145
Not available NTIS
Atomic Energy Commission, Washington, D.C.
Passivation of Brazed Joints to Fluorinating Atmospheres.
Patent,
Donald S. McGlasson, James T. Tidwell, Charles E. Weaver, and Charles A. Culpepper.
Filed 8 Nov 73, patented 7 Jan 75, 3p PAT-APPL-414 027
Government-owned invention available for licensing. Copy of patent available Commissioner of Patents, Washington, D.C. 20231 $0.50.

Descriptors: *Corrosion prevention, *Patents, *Brazed joints, Passivity, Aluminum, Aluminum alloys, Filler metal, Silicon containing alloys, Corrosion resistance.
Identifiers: PAT-CL-148-20-3.

The patent describes a method for enhancing the resistance to corrosion by fluorinating atmospheres of brazed joints comprising aluminum or aluminum-alloy base metals and an intervening layer of aluminum silicon alloy filler metal, this layer containing silicon as a continuous network extending to at least one surface of the joint. The method comprises heating the brazed joint to convert substantially all of the silicon network to discrete particles.

PB-241 822/6GA PC$4.25/MF$2.25
Anaconda American Brass Co., Waterbury, Conn.
Copper Recovery from Brass Mill Discharge by Cementation with Scrap Iron.
Final rept. 1 Jul 74-1 Jan 75,
Oliver P. Case. Apr 75, 60p EPA/670/2-75-029
Contract EPA-S-803226

Descriptors: *Copper, *Materials recovery, *Industrial waste treatment, *Metal finishing, Water pollution, Water reclamation, Brasses, Metal scrap, Iron, Chemical cleaning, Cost estimates, Precipitation(Chemistry), Chromium, Reduction(Chemistry).
Identifiers: *Water pollution control, Brass miles.

This report presents the results of studies of copper recovery (and incidental reduction of hexavalent chromium) in brass mill discharge by passage of the discharge over scrap iron in a rotating drum. The drum feed consisted of normal production discharge of combined pickle rinse water and spent sulfuric acid and sulfuric acid-bichromate pickle. About half of the total mill waste discharge over a period of 16 weeks was processed. Four modes of drum operation were studied: (1) continuous rotation, (2) no rotation, (3) intermittent rotation (1 hr off - 5 min on), and (4) intermittent rotation (2-1/2 hr off - 10 min on). Each mode was studied at two flow levels and two scrap iron surface area levels. Data were evaluated in terms of percent cementation of available copper, excess iron consumption over theoretical, and completeness of chromium reduction. Results indicate that the over-riding factor in the efficiency of copper cementation is the level of copper in the feed solution. Hexavalent chromium is effectively reduced providing the pH is below 2.5.

RD/B/N-2980 PC$4.00/MF$2.25
Central Electricity Generating Board, Berkeley (UK). Berkeley Nuclear Labs.
Effect of Carbon Transfer Between Stainless (Aisi 316) and Ferritic (2 1/4CR, 1MO) Steels in Sodium.
W. Charnock, J. E. Cordwell, J. R. Gwyther, and M. R. Hobdell. Oct 74, 27p FRDC/CEWP/P-(74)16, FRDC/FEWP/CPN-302
U.S. Sales Only.

Descriptors: (*Stainless steel-316, *Corrosion), (*Chromium-molybdenum steels, Corrosion), (*Sodium, *Corrosive effects), Carbon, Creep, Ductility, Mass transfer, Microhardness, Microstructure, Tensile properties.

For abstract, see NSA 31 12, number 33783.

RD-68-128 PC$4.25/MF$2.25
Wyman-Gordon Co., North Grafton, Mass.
Preliminary Investigations into Forgeability and Mechanical Properties of Electroslag Remelted Hastelloy X Alloy.
A. R. Jahagirdar. Sep 68, 25p

Descriptors: (*Hastelloy x, *Forging), Cracks, Ductility, Electroslag welding, Heat treatments, Mechanical properties, Melting.

For abstract, see NSA 31 12, number 33882.

SAND-74-0270 PC$4.00/MF$2.25
Sandia Labs., Albuquerque, N.Mex.
Environmentally Assisted Crack Growth in High Strength Steels.
J. Munford. Jan 75, 16p
Contract AT(29-1)-789

Descriptors: (*Steels, *Stress corrosion), (*Nickel alloys, Stress corrosion), (*Cobalt alloys, Stress corrosion), (*Molybdenum alloys, Stress corrosion), Aging, Cracks, Tempering, Welded joints, Titanium alloys, Chromium alloys.

For abstract, see NSA 31 12, number 33785.

SAND-75-6005 PC$8.00/MF$2.25
CEA Centre d'Etudes de Bruyeres-le-Chatel, 92 - Montrouge (France).
Study of Phase Transformations in Titanium Alloys. Ii. Contribution to the Study of Transformations in the Titanium Alloy TA sub 6 V sub 6 E sub 2 under Isothermal Conditions after Hardening from the (Alpha + beta) Field.
C. Fontalirand, C. Beauvais, J. P. Fidelle, and B. Hocheid. Mar 75, 97p
Translation of CEA-R--4566.

Descriptors: (*Titanium base alloys, *Phase transformations), (*Vanadium alloys, Phase transformations), (*Aluminium alloys, Phase transformations), (*Tin alloys, Phase transformations), Copper additions, High temperature, Iron additions, Isothermal processes, Very high temperature.

For abstract, see NSA 31 12, number 33983.

WANL-TMI-1441 PC$4.50/MF$2.25
Westinghouse Electric Corp., Pittsburgh, Pa. Astronuclear Lab.
Oxidation of Metals and Alloys at Higher Temperatures.
R. N. Pinchok. Apr 65, 26p

Descriptors: (*Titanium, *Oxidation), Ablation, Reaction kinetics, Reentry, Temperature dependence, Very high temperature.

For abstract, see NSA 31 12, number 33787.

WANL-TMI-1667 PC$4.00/MF$2.25
Westinghouse Electric Corp., Pittsburgh, Pa. Astronuclear Lab.
Beryllium Thermal Shock Test.
E. G. Igne. 14 Apr 66, 6p

Descriptors: (*Beryllium, *Thermal shock), Cracks, Gas flow, Mechanical tests, Stresses.

For abstract, see NSA 31 12, number 33895.

WANL-TMI-1692 PC$4.00/MF$2.25
Westinghouse Electric Corp., Pittsburgh, Pa. Astronuclear Lab.
Static Tension Test on Inconel 718 Tie Rods: Part No. 945C568-H01-K.
T. F. Hengstenberg. 18 Jul 66, 1p

Descriptors: (*Inconel 718, *Fracture properties), Elongation, Rods, Tensile properties, Yield strength.

For abstract, see NSA 31 12, number 33896.

WANL-TMI-1876 PC$4.00/MF$2.25
Westinghouse Electric Corp., Pittsburgh, Pa. Astronuclear Lab.
Summary Report on Low Cycle Fatigue Tests on Beryllium Reflector Material Emi-A2-01.
E. G. Igne. 27 Feb 68, 7p

Descriptors: (*Beryllium, *Fatigue), Failures, High temperature, Medium temperature, Reactor start-up, Reactors, Strains, Thermal shock.

For abstract, see NSA 31 12, number 33899.

WANL-TMI-1934 PC$4.00/MF$2.25
Westinghouse Electric Corp., Pittsburgh, Pa. Astronuclear Lab.
Beryllium Properties Tests.
L. P. Morgan. 10 Sep 68, 3p

Descriptors: (*Beryllium, *Fracture properties), Cracks, Deformation, High temperature, Stresses.

For abstract, see NSA 31 12, number 33900.

Y-1982 PC$4.00/MF$2.25
Oak Ridge Y-12 Plant, Tenn.
Delayed-Failure Test Method for Uranium and Uranium Alloys in Selected Atmospheres.
V. C. Hemperly. Mar 75, 13p
Contract W-7405-eng-26

Descriptors: (*Uranium, *Destructive testing), (*Uranium alloys, Destructive testing), Air, Argon, Controlled atmospheres, Failures, Nitric acid, Tensile properties, Water.

For abstract, see NSA 31 12, number 32978.

11G. Miscellaneous Materials

PATENT-3 856 700 Not available NTIS
Department of Agriculture, Washington, D.C.
Percursor Compositions from Animal Hide Glues for Dry-Structured Foams.
Patent,
Madeline G. Lambou, and James J. Spadaro.
Filed 4 Dec 72, patented 24 Dec 74, 5p PAT-APPL-311 611,
Supersedes PB-229 956.
Government-owned invention available for licensing. Copy of patent available Commissioner of Patents, Washington, D.C. 20231 $0.50.

Descriptors: *Patents, *Foam, *Glue, Hides, Surfactants, Cellular materials, Curing, Packing materials, Insulation.
Identifiers: PAT-CL-252-354.

The patent concerns economical agricultural foams prepared from certain formulations which contain animal hide glue and a surfactant. These agricultural foams are very lightweight and form 'skins' which protect the foams while they cure at temperatures of 0 to -20C. Curing drys the foams and permits them to retain their foam-like structure in the dry state. Such foams are suitable for light-weight packing materials or insulation.

11H. Oils, Lubricants, and Hydraulic Fluids

AD-A010 724/3GA PC$4.25/MF$2.25
Air Force Materials Lab Wright-Patterson AFB Ohio
Characterization of Graphite Fluoride, (CFx)n, as a Potential Solid Lubricant Material.
Final technical rept. Jan 72-Jan 74,
B. D. McConnel, C. E. Snyder, and J. R. Strang.
Mar 75, 69p Rept no. AFML-TR-74-35

Descriptors: *Solid lubricants, Impurities, Test methods, Carbon compounds, Fluorides, Performance(Engineering), Films, Pellets, Chemical composition.
Identifiers: Graphite fluoride.

Graphite Fluoride (CFx)n, from several sources, has been analyzed and evaluated for its friction, wear, and lubrication behavior. Pressed pellets, burnished films, and bonded films of (CFx)n has been compared to similar specimens of MoS2 in several test devices at room temperature conditions. Although the various (CFx)n materials have been shown to vary in chemical composition, color, impurity levels, and thermal stability, no significant difference in lubrication performance has been observed between these materials in the lubricant test devices. In general, (CFx)n has been found to be inferior to MoS2 in its lubrication behavior in the more severe test environments. Therefore, (CFx)n is not considered to be suitable for use as a solid lubricant in Air Force aircraft and weapon systems having heavy load lubrication requirements.

11I. Plastics

AD-A010 598/1GA PC$3.75/MF$2.25
Aerospace Corp El Segundo Calif Lab Operations
Preliminary Evaluation of a New High-Temperature Polymer.
Interim rept.,
William L. James. 7 May 75, 32p Rept no. TR-0075(9250-07)-1 SAMSO-TR-75-126
Contract F04701-74-C-0075

Descriptors: *Heat resistant plastics, *Polyphenylenes, Curing, Viscosity, Reinforced plastics, Mechanical properties, Fiber reinforced composites, Temperature, Graphited materials, Performance(Engineering).
Identifiers: Carbonization.

Some developments in processing a new high-temperature resin system are described. This new class of tractable polyphenylene polymers recently became available from Hercules, Inc., and has been evaluated from the standpoint of handling, processing, and performance characteristics. A dramatic improvement was achieved in ease of fabrication as compared with conventional polymers. This was accomplished with no observable sacrifice in high-temperature performance. Despite inherent limitations in the adhesive properties of this polymer system, fiber and fabric-reinforced composites with acceptable mechanical properties were successfully fabricated. A preliminary effort to graphitize a carbon-reinforced specimen with the polyphenylene matrix indicated that the system has promise for production of mechanically sound carbon-carbon composites.

N75-21372/8GA PC$4.25/MF$2.25
Texas A&M Research Foundation, College Station. Mechanics and Materials Research Center.
Stress Relaxation and Mechanical Properties of RL-1973 and Pd-200-16 Silicone Resin Sponge Materials.
Final Report, 6 Jun. 1974 - 28 Apr. 1975.
D. Saylak, J. S. Noel, J. S. Ham, and R. Mccoy.
Apr 75, 181p NASA-CR-132622
Contract NAS1-13342
Misc-with Appendix a.

Descriptors: *Resins, *Shear properties, *Silicon, *Stress relaxation, Mechanical properties, Space shuttle orbiters, Temperature gradients.

For abstract, see STAR 1313

N75-21375/1GA PC$3.25/MF$2.25
Monsanto Research Corp., Dayton, Ohio.
Preparation, Testing, and Delivery of Low Density Polyimide Foam Panels.
G. L. Ball, Iii, L. K. Post, and I. O. Salyer. Apr 75, 21p NASA-CR-137670, MRC-DA-490
Contract NAS2-8440

Descriptors: *Foams, *Low density materials, *Panels, *Polyimide resins, Fire prevention, Flame retardants, Performance tests, Product development.

For abstract, see STAR 1313

N75-21456/9GA PC$3.25/MF$2.25
National Aeronautics and Space Administration. Lewis Research Center, Cleveland, Ohio.
Effects of Multifunctional Crosslinking Agents on the Thermomechanical Properties of Polyimide Films.
P. Delvigs. 1975, 8p NASA-TM-X-71706
Conf-Proposed for Presentation at the Symp. Molecular Eng.: An Interface Between Polymer Chem. And Polymer Eng. At the 107TH Meeting of the AM. Chem. Soc., Chicago, 24-29 Aug. 1975.

Descriptors: *Polyimides, *Polymeric films, Amines, Crosslinking, Glass, Thermodynamic properties.

For abstract, see STAR 1313

PATENT-3 787 457 Not available NTIS
Department of Agriculture, Washington, D.C.
Vinyl Chloride Plastic Compositions and Certain Plasticizers Therefor.
Patent,
Robert R. Mod, Frank C. Magne, and Evald L. Skau. Filed 13 Sep 72, patented 22 Jan 74, 9p PAT-APPL-288 802,
Supersedes PB-230 646.
Government-owned invention available for licensing. Copy of patent available Commissioner of Patents, Washington, D.C. 20231 $0.50.

Descriptors: *Patents, *Vinyl chloride resins, *Plasticizers, Amides, Fatty acids, Aliphatic compounds.
Identifiers: Oleamide/N-ethyl-N-ethoxypropyl, PAT-CL-260-404.

The invention provides an N-alkyl-N-3-ethoxypropyl-oleamide, wherein the alkyl group contains 1-4 carbon atoms, which is useful as a plasticizer for vinyl chloride resins.

TID/SNA-1279 PC$4.50/MF$2.25
Aerojet-General Corp., Sacramento, Calif.
Radiation Effects on Teflon and Teflon-Based Materials at Liquid-Hydrogen Temperatures.
W. Weleff, H. S. McQueen, and W. E. Emmons.
15 Jun 64, 26p

Descriptors: (*Teflon, *Physical radiation effects), (*Composite materials, Physical radiation effects), Fibers, Nerva reactor, Tensile properties, Ultralow temperature.

For abstract, see NSA 31 12, number 34039.

11K. Solvents, Cleaners, and Abrasives

AD-A010 700/3GA PC$3.25/MF$2.25
Picatinny Arsenal Dover N J
Methods for Cleaning Silicones from Aluminum.
Technical memo.,
C. A. L. Westerdahl. May 75, 24p Rept no. PA-TM-2164

Descriptors: *Cleaning, *Silicones, *Radioactive contamination, *Organic solvents, Effectiveness, Aluminum.
Identifiers: *Vapor degreasing.

Three basic methods and five different solvent systems were used to clean radioactive silicone oil from the surfaces of aluminum tabs. The cleaning effectiveness of these different combinations is compared.

AD-A011 018/9GA PC$3.75/MF$2.25
Wisconsin Univ Madison Mathematics Research Center
Evaluation of Coated Abrasive Grain Geometry and Wear via Continuous Time Series Models.
Technical summary rept.,
M. S. Phadke, F. A. Burney, and S. M. Wu. Mar 75, 28p Rept no. MRC-TSR-1510
Contract DA-31-124-ARO(D)-462, Grant NSF-GP-40381

Descriptors: *Abrasives, Coatings, Wear, Time series analysis, Surface properties.

The coated abrasive profiles are characterized using the second order continuous autoregressive model. Based on a two sided moving average representation of this model, expressions are derived to calculate the geometry (apex angle, base width and orientation) of an average grain. Experimental results and analysis for six new and one worn coated abrasive are presented; and the capability of the grain geometry parameters to quantize wear is discussed.

11L. Wood and Paper Products

AD-A010 770/6GA PC$3.25/MF$2.25
Forest Products Lab Madison Wis
Producing Flakes for Structural Particleboard on a Ringhead Planer.
Forest Service research paper,
Bruce G. Heebink. 1975, 14p Rept no. FSRP-FPL-246

Descriptors: *Wood, Particles, Production, Residues, Tensile strength, Cutting tools, Knives, Thickness, Moisture, Quality, Test methods, Performance(Engineering).
Identifiers: *Particleboard, *Ringhead planers, Design, Wood flakes.

A method was sought and evaluated for making flakes on a ringhead planer (modification of a high-speed planer) by which flakes would be comparable to those made on a disk flaker (about 0.020 by 2 in. by random width). This exploratory method could upgrade the value of the residue from high-speed planers. Matched specimens were cut from typical Construction grade Douglas-fir. Variables were examined: Moisture content, angle of knives in ringhead, angle of cutting edge, position of ringhead in relation to centerline of piece being planed, and cutting speed. Attention was also focused on a design that would permit feed rates of up to 1,000 feet per minute.

AD-A010 771/4GA PC$3.75/MF$2.25
Forest Products Lab Madison Wis
Physical Characteristics of Seasoning Discolorations in Sugar Maple Sapwood.
Forest Service research paper,
John M. McMillen. 1975, 33p Rept no. FSRP-FPL-248

Descriptors: *Wood, *Discoloration, Drying, Stains, Colors, Visual inspection, Microscopes, Fungus diseases, Reflectance, Measurement, Spectrophotometers.
Identifiers: *Maple wood, Sapwood.

Gross and microscopic characteristics of sugar maple sapwood that has undergone color changes and discolorations of a chemical nature during seasoning are described and illustrated. The discolorations include reddish browning, interior graying, and sticker staining. The form of the colored matter in ray and axial parenchyma cells of reddish-browned lumber was mostly amorphous and that in the parenchyma cells of interior-grayed and sticker-stained lumber was mostly plasmatic. Quantitative values for color, of the International Commission on Illumination System, are given for reddish-browned and non-discolored material. Color variation usually was associated with variations in kiln-drying conditions. Discolorations such as interior graying and sticker staining were associated with slow air drying under mild conditions or improperly controlled kiln drying. Fungus infection was found in some specimens with interior graying.

AD-A010 774/8GA PC$3.25/MF$2.25
Forest Products Lab Madison Wis
Dry-Formed, Medium-Density Hardboards from Urban Forest Materials.
Forest Service research paper,
James F. Laundrie, and J. Dobbin McNatt. 1975, 11p Rept no. FSRP-FPL-254

Descriptors: *Fiberboard, *Production, Solid wastes, Paper, Curing, Quality, Urea, Polymers, Density, Structural properties, Urban areas.
Identifiers: Hardboards, Furniture, *Wastes recycling, *Solid waste disposal.

Dry-formed, medium-density hardboards were made from various combinations of wastepapers separated from household trash, used pallets, dismantled railroad cars, diseased elm trees, aspen, and newsprint, using urea resin and high frequency curing. Such material has potential use for various products, particularly high quality furniture corestock. Most of the properties of the experimental boards were as good as or better than those required for medium-density matformed wood particleboard but they were not as good as those obtained on three commercial boards made by the same process. Properties of these medium-density hardboards can be improved by the addition of more resin or by increasing the density of the boards.

AD-A010 775/5GA PC$3.25/MF$2.25
Forest Products Lab Madison Wis
Z-Direction Restraint, a New Approach to Papermaking.
Forest Service research paper,
Vance Setterholm, Roy E. Benson, John F. Wichmann, and Richard J. Auchter. 1975, 11p Rept no. FSRP-FPL-256

Descriptors: *Wood pulp, *Refining, *Paper, Fibers, Stiffness, Drying, Flexible materials, Tensile strength, Modulus of elasticity, Bonding, Yield, Quality.
Identifiers: Linerboard.

Recent trends of the pulp and paper industry toward higher pulp yields and less refining have resulted in the opportunity for new approaches to the drying process. Higher yields when combined with less refining mean less flexibility in papermaking fiber. Less flexibility usually results in fewer fiber bonds. Z-direction restraint offers a new approach to efficiently utilize the stiffer fibers and maintain fiber product performance at satisfactory levels. By employing Z-direction restraint it may be possible to make a superior quality linerboard from high-yield furnishes without refining. Linerboard made by this process can have properties far superior to those from conventional papermaking processes.

12. MATHEMATICAL SCIENCES

12A. Mathematics and Statistics

AD-A010 549/4GA PC$3.25/MF$2.25
Carnegie-Mellon Univ Pittsburgh Pa Graduate School of Industrial Administration
Bounds on Absorption Probabilities for the m-Dimensional Random Walk.
Technical rept.,
Thomas E. Morton, and William E. Wecker. Apr 74, 17p Rept no. RR-343
Contract N00014-67-A-0314-0007
Prepared in cooperation with Chicago Univ., Ill.

Descriptors: *Stochastic processes, Multivariate analysis, Normal density functions, Theorems.
Identifiers: *Random walk.

Simple procedures are given for computing an upper bound on the probability that an m-dimensional random walk has not been absorbed by step n. The increments of the walk are distributed independently, but not necessarily identically. The upper bound may be computed without knowledge of the means of the increment, the shapes of the nonabsorbing regions, or the starting point of the walk. The absorbing regions may also change with time. Under certain conditions the upper bound is shown to be a geometrically decreasing sequence. Computational examples are given. An application to convergence of the Eppen-Fama stochastic cash balance problem in horizon length is suggested.

AD-A010 576/7GA PC$3.25/MF$2.25
California Univ Los Angeles
On the Minimization of Certain Quadratic Functionals. I,
Magnus Hestenes, and Ray Redheffer. 3 Oct 73, 14p ARO-5863.50-M
Grants DA-ARO-D-31-124-71-G18, NSF-GP-28240
See also AD-A010 577.
Availability: Pub. in Archive for Rational Mechanics and Analysis, v56 n1 p1-14 1974.

Descriptors: *Functions(Mathematics), Rational functions, Mechanics, Theorems, Reprints.
Identifiers: *Quadratic functionals.

AD-A010 577/5GA PC$3.25/MF$2.25
California Univ Los Angeles
On the Minimization of Certain Quadratic Functionals. II,
Magnus Hestenes, and Ray Redheffer. 17 Dec 74, 19p ARO-5863.56-M
Grants DA-ARO-D-31-124-71-G18, NSF-GP-28240
See also AD-010 576.
Availability: Pub. in Archive for Rational Mechanics and Analysis, v56 n1 p15-33 1974.

Descriptors: *Functions(Mathematics), Rational functions, Mechanics, Reprints.
Identifiers: *Quadratic functionals.

AD-A010 578/3GA PC$3.25/MF$2.25
Carnegie-Mellon Univ Pittsburgh Pa
On Fourier's Analysis of Linear Inequality Systems,
R. J. Duffin. 23 Aug 73, 25p ARO-9300.16-M
Grant DA-ARO-D-31-124-71-G17
Availability: Pub. in Mathematical Programming Study 1, p71-95 1974.

Descriptors: *Linear programming, *Fourier analysis, Inequalities, Algorithms, Mathematical programming, Computer programs, Coding, Reprints.

Fourier treated a system of linear inequalities by a method of elimination of variables. This method can be used to derive the duality theory of linear programming. Perhaps this furnishes the quickest proof both for finite and infinite linear programs. For numerical evaluation of a linear program, Fourier's procedure is very cumbersome because a variable is eliminated by adding each pair of inequalities having coefficients of opposite sign. This introduces many redundant inequalities. However, modifications are possible which reduce the number of redundant inequalities generated. With these modifications the methods of Fourier becomes a practical computational algorithm for a class of parametric linear programs. (Author)

AD-A010 579/1GA PC$3.25/MF$2.25
California Univ Los Angeles
Biharmonic Green's Functions and Quasiharmonic Degeneracy,
C. Y. Wang. 1 Aug 74, 6p ARO-9653.65-M
Grant DA-ARO-D-31-124-73-G39
Availability: Pub. in Mathematica Scandinavica, 35 p38-42 1974.

Descriptors: *Green's function, Harmonics, Boundaries, Theorems, Reprints, Theory.
Identifiers: Manifolds, Quasiharmonic degeneracy, Biharmonic functions, Riemannian manifolds.

On a Riemannian manifold, let gamma be the biharmonic Green's function which, roughly speaking, satisfies gamma=delta gamma=0 on the ideal boundary. Denote by O(N) sub tau the class of Riemannian N-manifolds on which no gama exists.

AD-A010 604/7GA PC$3.25/MF$2.25
Iowa State Univ Ames
The Asymptotic Theory of Concomitants of Order Statistics,
H. A. David, and J. Galambos. 21 Dec 73, 12p ARO-11259.3-M
Grant DA-ARO-D-31-124-73-G55
Availability: Pub. in Jnl. of Applied Probability, v11 n4 p762-770 Dec 74.

Descriptors: *Statistical samples, Statistical distributions, Bivariate analysis, Asymptotic series, Moments, Theory, Reprints.
Identifiers: Order statistics.

AD-A010 605/4GA PC$3.25/MF$2.25
Iowa Univ Iowa City
Positive Definite Functions and Volterra Integral Equations,
James S. W. Wong. 3 Jan 74, 6p ARO-10342.7-M
Grant DA-ARO-d-31-124-72-G95
Availability: Pub. in Bulletin of the American Mathematical Society, v80 n4 Jul 74.

Descriptors: *Integral equations, *Volterra equations, Viscoelasticity, Partial differential equations, Fourier transformation, Stability, Asymptotic series, Reprints.

The purpose of this research announcement is to describe a new approach for studying asymptotic behavior of solutions of functional equations involving a Volterra operator. More specifically, we study the role played by positive definite and related classes of functions as convolution kernels of the Volterra operators. (Author)

AD-A010 606/2GA PC$3.25/MF$2.25
Iowa Univ Iowa City
On the Strong Limit-n Classification of Linear Ordinary Differential Expressions of Order 2n,
W. N. Everitt, D. B. Hinton, and J. S. W. Wong. 26 Apr 73, 20p ARO-10342.8-M
Grant DA-ARO-D-31-124-72-G95
Availability: Pub. in Proceedings of the London Mathematical Society, Ser3 v29 p351-367 Sep 74.

Descriptors: *Differential equations, Operators(Mathematics), Classification, Linear systems, Reprints.
Identifiers: Limits(Mathematics).

This paper is concerned with some properties of the linear, ordinary differential expression M(.), of order 2n where n = 1,2,....

AD-A010 607/0GA PC$3.25/MF$2.25
Utah Univ Salt Lake City Dept of Mathematics
Boundary Value Problems and Comparison Theorems for Ordinary Differential Equations,
Klaus Schmitt. 17 Oct 72, 10p ARO-9157.6-M
Grant DA-ARO-D-31-124-72-G56
Availability: Pub. in SIAM Jnl. on Applied Mathematics, v26 n3 p670-678 May 74.

Descriptors: *Differential equations, *Boundary value problems, Linear differential equations, Comparison, Operators(Mathematics), Reprints.

In this paper we present some existence theorems for boundary value problems for the equation Ly=f(x,y), where L is a disconjugate differential operator of order n. These results are used to establish comparison theorems for linear differential equations of order n. (Author)

AD-A010 615/3GA PC$3.25/MF$2.25
Pembroke State Univ N C
New Representations of Posets,
Kim Ki-Hang Butler. 1973, 10p ARO-11340.3-M
Grant DA-ARO-D-31-124-73-G114
Availability: Pub. in Colloquia Mathematica Societatis Janos Bolyai, p241-250 1973.

Descriptors: *Boolean algebra, *Set theory, Matrices(Mathematics), Functions(Mathematics).
Identifiers: Posets.

The purpose of the present paper is to show that every poset can be represented as a product of a nonsingular binary relation with its unique Vagner inverse. We shall also display several important general methods of constructing new posets out of old ones. (Author)

AD-A010 685/6GA PC$3.25/MF$2.25
Florida Univ Gainesville
A Minimax Location Problem on a Network,
P. M. Dearing, and R. L. Francis. Oct 73, 12p ARO-T-1.106-RT
Contract DAHC04-68-C-0002
Availability: Pub. in unidentified publication, p333-343.

Descriptors: *Minimax technique, *Networks, Transportation, Algorithms, Roads, Position(Location), Reprints.
Identifiers: Trees(Mathematics).

We consider a network model of a system of transportation links, with nodes representing locations of existing facilities, and study the problem of finding a new facility location on the network that minimizes the maximum of linear increasing functions of the 'network distances' between the new facility and the existing facilities. The problem is formulated with respect to a metric space which is defined on the network, and a number of properties of the problem are developed. The properties lead to a new, simple algorithm for solving the problem when the network is a tree, and to a new, equivalent spanning tree problem for a general network. (Author)

AD-A010 695/5GA PC$3.75/MF$2.25
New York Univ N Y Courant Inst of Mathematical Sciences
Perturbation Methods in Stochastic Wave Propagation,
Pao-Liu Chow. 20 May 74, 26p Rept no. SI-22
Contract N00014-67-A-0467-0027
Availability: Pub. in SIAM Review, v17 n1 p57-81 Jan 75.

Descriptors: *Perturbation theory, *Wave propagation, Three dimensional flow, Stochastic processes, High frequency, Approximation(Mathematics), Equations, Reprints.

Several methods of approximation applicable to problems in wave propagation governed by a three-dimensional random reduced wave equation are presented within the framework of perturbation theory. For moderate wave numbers, the methods collected in this paper include the regular perturbation, two-variable method, the smoothing perturbation and the direct interaction approximation. At high frequencies, the parabolic equation approximation, the logarithmic regular perturbation and the geometric optics approximation are described. The validity and accuracy of various approximations are discussed by comparing them with an exact solution constructed through a function space integration. (Author)

AD-A010 730/0GA PC$4.25/MF$2.25
Illinois Univ Urbana Coordinated Science Lab
A Systematic Nonlinear State Feedback Suboptimal Control Design for a Class of Nonlinear Systems.
Technical rept.,
Angelo Augusto Yong. Apr 75, 62p Rept nos. R-675, UILU-ENG-75-2210
Contract DAAB07-72-C-0259, Grant AF-AFOSR-3570-73

Descriptors: *Control theory, Nonlinear systems, Feedback, Partial differential equations, Matrices(Mathematics), Recursive functions, Computer programs, Theses.
Identifiers: Automatic control, Riccati equation.

The design of a nonlinear state feedback suboptimal control using parameter expansion techniques and the minimum principle is developed with a quadratic performance index to be minimized. The design is systematic when the nonlinearities of the system can be written as polynomial functions of the state variables. Then, the linear portion of the control is designed using the Riccati equation in the same way as in linear systems, and the nonlinear part is assumed to be homogeneous polynomials of the state variables with unknown coefficients that are in general function of t. A computer routine is developed to aid the determination of these coefficients. The method is applied to two examples. The first illustrates the design procedure and some features of the control, and the second is a study of a physical system.

AD-A010 735/9GA PC$3.25/MF$2.25
Florida State Univ Tallahassee Dept of Statistics

Time Series Prediction Problems with Uncertain Observations,
Lawrence Peele, and George Kimeldorf. Mar 75, 19p Rept nos. FSU-TR-M336, TR-46 AFOSR-TR-75-0617
Grants AF-AFOSR-2581-74, DAHC04-74-G-0188
Also pub. as USARO-D-TR-16.

Descriptors: *Time series analysis, *Mathematical prediction, Analysis of variance, Estimates, Random variables, Hilbert space, Theorems.
Identifiers: Maximum likelihood estimations.

AD-A010 736/7GA PC$6.25/MF$2.25
Illinois Univ Urbana Coordinated Science Lab
The Analysis and Control of Large Scale Composite Systems.
Technical rept.,
Umit Ozguner. May 75, 166p Rept nos. R-680, UILU-ENG-75-2215
Contract DAAB07-72-C-0259, Grant AF-AFOSR-2570-73

Descriptors: *Control theory, Linear systems, Game theory, Matrices(Mathematics), Feedback, Mathematical models, Theorems, Theses.
Identifiers: Time invariant systems, Graph theory.

Many physical systems are composed of an interconnection of smaller subsystems. This thesis is concerned with the analysis and control of such large Scale Composite (LSC) dynamic systems. Each subsystem and all interconnections are assumed to be linear and time-invariant. Structural properties and optimality considerations are investigated. Related to structural properties, the existence of the composite state space of full dimension, location of eigenvalues, controllability, pole-placement, stabilizability and disturbance rejection are analyzed. Two graphs are defined related to the LSC system. These aid in determining existence of loop-free interconnections, identifying constituents in multilevel structures, enumerating paths and checking existence conditions and eigenvalue locations. A weak interconnection condition is defined and used for both location of composite system eigenvalues and obtaining a sufficient condition for stability.

AD-A010 746/6GA PC$3.25/MF$2.25
Florida State Univ Tallahassee
Weak Convergence of Empirical Distribution Functions of Random Variables Subject to Perturbations and Scale Factors,
J. S. Rao, and J. Sethuraman. Dec 71, 15p
Contract Nonr-988(08)
Prepared in cooperation with Indiana Univ., Grant AF-AFOSR-2009-7171.
Availability: Pub. in the Annals of Statistics, v3 n2 p299-313 1975.

Descriptors: *Distribution functions, Random vibration, Perturbation theory, Scaling factors, Reprints.

The weak convergence of empirical distribution functions of independent identically distributed random variables is well known and has been studied by several authors, notably Doob (1949) and Donsker (1951). In an earlier paper, Sethuraman and Rao (1970), while studying the asymptotic efficiencies of tests based on spacings, need to study the weak convergence of empirical distribution functions of random variables subject to random perturbations and scale factors was found. This problem is studied in this paper.

AD-A010 747/4GA PC$3.75/MF$2.25
Johns Hopkins Univ Baltimore Md Dept of Mechanics and Materials Science
Limitations of Gradient Transport Models in Random Walks and in Turbulence. Random Walks on Markovian Binary Velocity Fields,
Stanley Corrsin, and G. S. Patterson, Jr. 1974, 49p
Contracts N00014-67-A-0163-0005, Nonr-4010(05)
Availability: Pub. in Advances in Geophysics, v18A p25-71 1974.

Descriptors: *Random variables, *Markov processes, *Turbulent flow, Transport, Diffusion theory, Particles, Velocity, Flow fields, Gradients, Reprints.
Identifiers: Random walk.

Traditional random walks proceed with random instructions given directly to the wandering particle. Thus, in fluid mechanics terminology the are purely Lagrangian problems. Under the stimulus of the physical problem of turbulent diffusion, it is interesting to study the walk of a particle on a random velocity field whose stochastic properties are given in Eulerian coordinates, i.e. in spacetime. When the Eulerian velocity field is restricted to being Markovian, the probability density function of particle displacement satisfies a difference equation. One of its continuous limits is a generalized telegraph equation, which may be useful for some mathematical modeling or turbulent diffusion. Following a brief review of general system restrictions sufficient for the mean flux in a random transport process to be approximated as the product of the negative mean gradient times, a transport coefficient (a diffusivity), explicit random walk models are analyzed. In particular, inhomogeneity and non-stationarity are allowed in both the transported field mean gradient and the transporting mechanism (i.e., its r.m.s. velocity and its step length). Measured quantities analogous to the longest correction terms (representing departures from simple gradient transport) were computed for turbulent boundary layer data; some of them are appreciable, indicating that simple gradient transport models are wrong in principle.

AD-A010 769/8GA PC$3.25/MF$2.25
Pennsylvania State Univ University Park
Sample Size for Selecting the Better of Two Weibull Populations.
Journal article,
Alfred W. Rademaker , and Charles E. Antle. 15 Mar 72, 6p ARL-750171
Contract F33615-73-C-4080
Availability: Pub. in IEEE Transactions on Reliability, vR-24 n1 p17-20 Apr 75.

Descriptors: *Sampling, *Weibull density functions, Population(Mathematics), Life tests, Decision theory, Reliability, Reprints.

Suppose an experimenter wishes to select the better of two Weibull populations. In a life testing situation he may have some time t-star for which the device must perform property and he would consider the better population to be the one with the larger reliability at time t-star. It is reasonable for the experimenter to test n items from each of the two populations until there are r(r less than or equal to n) failures from each and then select as better the population for which the maximum likelihood estimate of the reliability at time t-star is the larger. This paper presents the sample sizes needed to achieve a desired level for the probability of correct selection with such a decision rule. (Author)

AD-A010 772/2GA PC$3.25/MF$2.25
North Carolina Univ Chapel Hill Dept of Statistics
Delta Modulation of the Wiener Process.
Interim rept.,
Elias Masry, and Stamatis Cambanis. 1975, 17p AFOSR-TR-75-0647
Contract N00014-75-C-0652, Grant AF-AFOSR-2386-72
Prepared in cooperation with California Univ., San Diego, La Jolla. Dept. of Applied Physics and Information Science.

Descriptors: *Delta modulation, *Stochastic processes, Sampling, Analysis of variance, Mean, Probability density functions, Optimization.
Identifiers: *Wiener processes.

The analysis of the performance of a delta modulator with a Wiener process input is considered. The mean and the variance of the steady state squared error are derived. In addition, the mean of the steady state error of order four is calculated. It is shown that the behavior of all these moments as functions of the step size delta and the sampling interval T is similar: For each fixed delta, the moments are monotonically increasing in T. More important, for each fixed T, there exists an optimal step size (delta opt) which minimizes each of these moments. It is shown that (delta opt) is a multiple of square root of (T) and that corresponding minimum value of the moments is a multiple of either T or (T squared), depending on the order of the moment.

AD-A010 776/3GA PC$3.75/MF$2.25
North Carolina Univ Chapel Hill Dept of Statistics
Some Incomplete and Boundedly Complete Families of Distributions.
Interim rept.,
Wassily Hoeffding. Mar 75, 40p Rept no. Mimeo Ser-984 AFOSR-TR-75-0648
Grant AFOSR-2386-72

Descriptors: *Sampling, *Distribution functions, *Measure theory, Probability density functions, Permutations, Inequalities, Random variables, Analysis of variance, Theorems.

AD-A010 783/9GA PC$3.25/MF$2.25
Wisconsin Univ Madison Mathematics Research Center
The Potential of a Line Segment.
Technical summary rept.,
K. B. Ranger. Apr 75, 25p Rept no. MRC-TSR-1482
Contract DA-31-124-ARO-D-462

Descriptors: *Potential theory, *Integral transforms, Boundary value problems, Green's function, Laplace transformation.
Identifiers: *Mixed boundary value problems.

Two different integral transformation methods are described for determining the potential of a straight line segment. The potential is found to be continuous with its derivatives everywhere except at the tips of the needle where the first derivatives behave like the inverse square root of distance from a tip. At infinity the potential behaves like a source or point charge.

AD-A010 814/2GA PC$3.25/MF$2.25
Naval Postgraduate School Monterey Calif
Locally Determined Smooth Interpolation at Irregularly Spaced Points in Several Variables.
Technical rept Jan-Mar 75,
Richard Franke. Apr 75, 23p Rept no. NPS-53-Fe75041

Descriptors: *Functions(Mathematics), *Interpolation, Approximation, Polynomials, Computations.

A class of methods for local interpolation at irregularly spaced points for functions of two or more variables is developed. The methods are based on a weighted average of the values of local interpolating functions, with the local interpolating functions and the weighting functions chosen so as to incorporate the desired smoothness. Numerical results for several in-

terpolation functions from this class are compared with global approximations, some of which are local when implemented on a computer.

AD-A010 835/7GA PC$3.25/MF$2.25
New York Univ N Y Courant Inst of Mathematical Sciences
Sobolev and Isoperimetric Inequalities for Riemannian Submanifolds,
David Hoffman, and Joel Spruck. Mar 74, 13p
Grants DA-ARO-D-31-124-73-G178, NSF-GP-37069X
Availability: Pub. in Communications on Pure and Applied Mathematics, v27 p715-727 1974.

Descriptors: *Inequalities, Applied mathematics, Vector spaces, Integration, Geodesics, Reprints.
Identifiers: Sobolev inequalities, Riemannian submanifolds, Riemannian manifolds.

In this paper we prove general Sobolev and isoperimetric inequalities for submanifolds M of a Riemannian manifold closure of M, satisfying geometric restrictions involving the volume of M, the sectional curvatures of closure of M and the injectivity radius of closure of M.

AD-A010 837/3GA PC$3.25/MF$2.25
California Univ Los Angeles
Dirichlet Finite Biharmonic Functions on the Poincare N-Ball,
D. Hada, L. Sario, and C. Wang. 17 Aug 72, 13p ARO-9653.74-M
Grant DA-ARO-D-31-124-71-G181
Availability: Pub. in Jnl. fuer die Reine und Angewandte Mathematik, v272 p92-101.

Descriptors: *Harmonics, Operators(Mathematics), Functions(Mathematics), Reprints.
Identifiers: Riemannian manifolds, Harmonic functions, Biharmonic functions.

AD-A010 842/3GA PC$3.25/MF$2.25
Institute for Advanced Study Princeton N J
Singleton Critical Values,
Marston Morse. 30 Sep 74, 20p ARO-6103.25-M
Grant DAHC04-74-G-0163
Availability: Pub. in Bulletin of the Inst. of Mathematics Academia Sinica, v2 n2 p317-333 Dec 74.

Descriptors: *Vector spaces, *Geodesics, Value, Criticality, Topology, Differential geometry, Taiwan, Reprints.
Identifiers: Riemannian manifolds, Singleton values.

AD-A010 891/0GA PC$3.25/MF$2.25
Florida Univ Gainesville
A Network Approach to a Multi-Facility, Multi-Product Production Scheduling Problem Without Backordering,
Robert C. Dorsey, Thom J. Hodgson, and H. Donald Ratliff. Feb 73, 12p ARO-10321.1-EL
Contract N00014-68-A-0173-0013, Grant DA-ARO-D-31-124-71-G183
Supersedes Rept. no. RR-73-5 dated Jan 73, AD-757 421.
Availability: Pub. in Management Science, v21 n7 p813-822 Mar 75.

Descriptors: *Mathematical programming, *Logistics planning, *Production, Scheduling, Management planning and control, Operations research, Algorithms, Flow rate, Reprints.
Identifiers: *Logistics management.

A multi-product, multi-facility production scheduling problem is considered over a finite planning horizon. The horizon consists of discrete production periods during each of which at most one product can be assigned to each facility. Product demand rates are assumed to be constant over a period but not necessarily identical in all periods. All demands must be met without allowing backorders. The problem objective is to determine on assignment of products to facilities over the horizon which minimizes the sum of production and inventory carrying charges. The problem is formulated as a network flow problem for which efficient solution procedures are known. However, for an important special case a single pass algorithm is given which is more efficient than the standard flow algorithms. (Author)

AD-A010 892/8GA PC$3.25/MF$2.25
Cornell Univ Ithaca N Y Dept of Operations Research
An Iterated Integral Representation for a Multivariate Normal Integral Having Covariance Structure,
Robert E. Bechofer, and Ajit C. Tamhane. Feb 74, 6p ARO-11077.1-M
Contract DAHC04-73-C-0008
Availability: Pub. in Biometrika, v61 n3 p615-619 1974.

Descriptors: *Probability, Multivariate analysis, Integral equations, Numerical integration, Covariance, Operations research, Reprints.

It is shown that a km-variate normal probability integral over a rectangular region can be expressed as an interated k-variate normal integral when the sets of m variates each have a certain commonly realized block covariance structure. The latter representation is much easier to evaluate numerically than is the former. This result generalizes previous results for k = 1 of Dunnett and Sobel and Steck and Owen. (Author)

AD-A010 895/1GA PC$3.25/MF$2.25
Institute for Advanced Study Princeton N J
Frechet Curve Classes,
Marston Morse. 15 Mar 74, 11p ARO-6103.24-M
Grant DA-ARO-D-31-124-73-G61
Availability: Pub. in Journal de Mathematiques Pures et Appliquees, v53 n3 p291-298 1974.

Descriptors: *Topology, Curve fitting, Variations, Mapping, Theorems, Applied mathematics, France, Reprints.
Identifiers: Frechet spaces.

AD-A010 948/8GA PC$3.25/MF$2.25
New York Univ N Y Courant Inst of Mathematical Sciences
Perturbed Bifurcation Theory at Multiple Eigenvalues,
James P. Keener. 24 May 74, 22p Rept no. SI-27
Contract N00014-67-A-0467-0027
Availability: Pub. in Archive for Rational Mechanics and Analysis, v56 n4 p348-366 1974.

Descriptors: *Eigenvectors, *Perturbation theory, Buckling, Rational functions, Mathematical prediction, Nonlinear systems, Cylindrical bodies, Reprints.

Nonlinear bifurcation phenomena have been studied in connection with many problems of physical interest. However, when used to study the buckling of loaded elastic structures, it is not uncommon that bifurcation results are at variance with observations particularly when one tries to predict buckling loads. This is frequently due to small deviations from the ideal configuration assumed in the nonlinear theory. When included in the formulation such initial imperfections yield perturbed bifurcation problems.

AD-A010 987/6GA PC$6.25/MF$2.25
Wisconsin Univ Madison Mathematics Research Center
High Precision Coefficients Related to the Zeta Function.
Summary rept.,
Fred D. Crary, and J. Barkley Rosser. May 75, 175p Rept no. MRC-TSR-1344
Contract DA-31-124-ARO(D)-462

Descriptors: *Special functions(Mathematical), *Approximation, Complex variables, Computations, Theorems.
Identifiers: *Zeta function, Riemann-Siegel theorem, Mathematical tables.

If one wishes to calculate numerical approximations for the Riemann zeta function in the 'critical strip', the most efficient procedure presently known is to use the Riemann-Siegel Formula. In the present report, highly accurate approximations for the primary coefficients appearing in this formula are given.

AD-A010 988/4GA PC$4.25/MF$2.25
Wisconsin Univ Madison Mathematics Research Center
A Semilinear Elliptic Equation in (L sup 1)(R sup N).
Technical summary rept.,
Philippe Benilan, Haim Brezis, and Michael G. Crandall. Apr 75, 54p Rept no. MRC-TSR-1526
Contract DA-31-124-ARO(D)-462, Grant NSF-GP-38519

Descriptors: *Partial differential equations, Functional analysis, Measure theory, Theorems.
Identifiers: Elliptic differential equations, Uniqueness theorems.

AD-A010 994/2GA PC$3.25/MF$2.25
California Univ Santa Barbara Quantum Inst
On the Statistical Mechanics of Coupled Order Parameters,
Yoseph Imry. 27 Jun 74, 12p ARO-10409.11-P
Grant DA-ARO-D-31-124-72-G74
Availability: Pub. in Jnl. of Physics C: Solid State Physics, v8 p567-577 1975.

Descriptors: *Statistical mechanics, Solid state physics, Superconductivity, Instability, Phase diagrams, Coupling(Interaction), Reprints.

Generalized Landau-Ginsburg models for systems with coupled order parameters are introduced. Detailed discussion is given for a particular model with biquadratic coupling between two (second-order) order parameters. This includes the complete, rather interesting, phase diagrams within the Landau-theory approximation and a discussion of fluctuation effects. For these we present simple expectations based on the topology of the Landau free-energy surfaces and renormalization group results including an identification of the limitations of the latter. It is argued that these models are very general and relevant to many systems of experimental interest. (Author)

AD-A011 004/9GA PC$3.25/MF$2.25
North Carolina State Univ Raleigh
Representations of Fourier Transforms for Distributions.
Raimond A. Struble. 1 Sep 74, 18p ARO-10647.15-M
Grant DA-ARO-D-31-124-72-G192
Availability: Pub. in Bulletin of the Institute of Mathematics Academia Sinica, v2 n2 p191-206 Dec 74.

Descriptors: *Fourier transformation, Distribution theory, Sequences(Mathematics), Tensor analysis, Functions(Mathematics), Reprints.
Identifiers: Delta functions.

Fourier transforms, which were originally defined only for tempered distributions by Schwartz, have been extended to arbitrary distributions by Ehrenpreis and Gelfand and Shilov. For this extension it is necessary to go beyond the original framework of distributions and to consider functionals on linear spaces of

entire functions, which we shall call, simply, ultradistributions. The fourier transform of a distribution is then defined as that ultradistribution for which the pair satisfies a Parseval relation when applied to corresponding test functions, one of which is the ordinary Fourier transform of the other.

AD-A011 006/4GA PC$3.75/MF$2.25
Wisconsin Univ Madison Mathematics Research Center
On an Integral Equation in a Hilbert Space.
Technical summary rept.,
S.-O. Londen. Apr 75, 41p Rept no. MRC-TSR-1527
Contract DA-31-124-ARO(D)-462

Descriptors: *Volterra equations, Nonlinear systems, Hilbert space, Theorems.
Identifiers: Existence theorems, Uniqueness theorems.

The author gives an existence and uniqueness theorem for a nonlinear Volterra equation, followed by a result detailing the asymptotic behavior of solutions of that equation.

AD-A011 007/2GA PC$3.75/MF$2.25
Wisconsin Univ Madison Mathematics Research Center
Kuratowski's and Wagner's Theorems for Matroids.
Technical summary rept.,
Robert E. Bixby. Apr 75, 48p Rept no. MRC-TSR-1531
Contract DA-31-124-ARO(D)-462

Descriptors: *Matrices(Mathematics), Graphics, Set theory, Theorems.
Identifiers: *Matroids, Graph theory.

In an earlier paper the author proved the following theorem which provides a strengthening of Tutte's well-known characterization of regular (totally unimodular) matroids: A binary matroid is regular if it does not have the Fano matroid or its dual as a series-minor (parellel-minor). In this paper the author proves two theorems which provide the same kind of strengthening for Tutte's characterization of the graphic matroids (i.e., bond-matroids). These two theorems are called Kuratowski's and Wagner's Theorems for Matroids in view of the graph theoretic results which they generalize.

AD-A011 008/0GA PC$3.25/MF$2.25
Wisconsin Univ Madison Mathematics Research Center
A Generalized Fuchsian Theory and Some Applications to Special Functions.
Technical summary rept.,
Klaus W. A. Bohmer. Mar 75, 23p Rept no. MRC-TSR-1520
Contract DA-31-124-ARO(D)-462

Descriptors: *Hypergeometric functions, *Linear differential equations, Complex variables, Theorems.

After briefly reviewing a generalized FUCHSian theory the author characterizes some classes of special functions which are solutions of linear differential equations by conditions on the growth and symmetry of these solutions. The conditions here are made more natural than those in another paper by the author by avoiding the 'THOME condition' which is used there.

AD-A011 009/8GA PC$3.25/MF$2.25
Wisconsin Univ Madison Mathematics Research Center
Extremum Problems for the Motions of a Billiard Ball. I. The L sup p Norm, 1 = or < p < Infinity.
Technical summary rept.,
I. J. Schoenberg. Apr 75, 21p Rept no. MRC-TSR-1538
Contract DA-31-124-ARO(D)-462
See also Part 2, AD-A011 010.

Descriptors: *Geometry, *Number theory, Periodic functions, Motion, Theorems.
Identifiers: Billiard balls.

Given the unit cube, the author considers the motion of a point which moves like a billiard ball, i.e. performs a rectilinear and uniform motion that is being reflected in the usual way on striking any one of the 2n faces.

AD-A011 010/6GA PC$3.75/MF$2.25
Wisconsin Univ Madison Mathematics Research Center
Extremum Problems for the Motions of a Billiard Ball. II. The (L sub infinity) Norm.
Technical summary rept.,
I. J. Schoenberg. Apr 75, 28p Rept no. MRC-TSR-1539
Contract DA-31-124-ARO(D)-462
See also Part 1, AD-A011 009.

Descriptors: *Geometry, *Number theory, Boundary value problems, Motion, Theorems.
Identifiers: Billiard balls.

Among the motions Gamma of a billiard ball within the unit cube U of R sub n, the author considers those Gamma whose paths are farthest away from the center of U in terms of the (L sub infinity) norm.

AD-A011 013/0GA PC$3.75/MF$2.25
Wisconsin Univ Madison Mathematics Research Center
A Quasi-Newton Method for Unconstrained Minimization Problems.
Technical summary rept.,
K. Ritter. Apr 75, 42p Rept no. MRC-TSR-1498
Contract DA-31-124-ARO(D)-462

Descriptors: *Functions(Mathematics), Optimization, Convergence, Theorems.
Identifiers: Minimization, Newton method.

A method is described for the minimization of a function F(x) of n variables. Convergence to a stationary point is shown without assumptions on second order derivatives. If the sequence generated by this method has a cluster point in a neighbourhood of which F(x) is twice continuously differentiable and has a positive definite Hessian matrix, then the convergence is superlinear. It is shown that under appropriate assumptions n consecutive search directions are conjugate. No computation of second order derivatives is required.

AD-A011 014/8GA PC$4.25/MF$2.25
Wisconsin Univ Madison Mathematics Research Center
Estimates of the Duality Gap of Non-Convex Optimization Problems.
Technical summary rept.,
Jean-Pierre Aubin, and Ivar Ekeland. Mar 75, 55p Rept no. MRC-TSR-1491
Contract DA-31-124-ARO(D)-462

Descriptors: *Functions(Mathematics), *Optimization, Convex sets, Nonlinear systems, Inequalities, Theorems.

The difference between the optimal values of an optimization problem and its dual is called 'the duality gap'. Under convenient assumptions (the so-called constraint qualification assumptions), it is known that the length of the duality gap is equal to zero when the functions and the constraints are convex. The aim of this paper is prove estimates of the duality gap in terms of a convenient measure of the 'lack of convexity' of the functions involved in the optimization problem.

AD-A011 015/5GA PC$4.75/MF$2.25
Wisconsin Univ Madison Mathematics Research Center
Difference Methods for Boundary Value Problems with a Singularity of the First Kind.
Technical summary rept.,
Frank R. de Hoog, and Richard Weiss. Apr 75, 78p Rept no. MRC-TSR-1536
Contract DA-31-124-ARO(D)-462, Grant NSF-MPS72-00381-A01

Descriptors: *Boundary value problems, *Finite difference theory, *Nonlinear differential equations, *Numerical integration, Asymptotic series, Matrices(Mathematics), Theorems.
Identifiers: Eigenvalues.

The application of certain difference schemes (box, trapezoidal, Euler and backward Euler) to the numerical solution of boundary value problems for nonlinear first order systems of ordinary differential equations with a singularity of the first kind is examined. The solution of the linear eigenvalue problem is also considered.

AD-A011 019/7GA PC$3.75/MF$2.25
Wisconsin Univ Madison Mathematics Research Center
Extreme Contractions in Hilbert Space.
Technical summary rept.,
Eduardo H. Zarentonello. Apr 75, 30p Rept no. MRC-TSR-1543
Contract DA-31-124-ARO(D)-462

Descriptors: *Hilbert space, *Mapping(Transformations), Convex sets, Theorems.
Identifiers: Convex functions.

The determination of extreme points in the class of all contractions in Hilbert space is reduced to the search for maximal monotone mappings M for which the inner distance between two graph points vanishes identically. A variety of examples is exhibited. In particular, polyhedral convex functions appear as determining extreme contractions dense in the class of all contractive gradients.

AD-A011 020/5GA PC$3.75/MF$2.25
Wisconsin Univ Madison Mathematics Research Center
On the Relation of the Operator Partial derivative with respect to s + Partial derivative with respect to tau to Evolution Governed by Accretive Operators.
Technical summary rept.,
Michael G. Crandall, and L. C. Evans. Apr 75, 36p Rept no. MRC-TSR-1541
Contract DA-31-124-ARO(D)-462

Descriptors: *Partial differential equations, Boundary value problems, Cauchy problem, Approximation(Mathematics), Banach space, Convergence, Inequalities, Theorems.
Identifiers: Convergence theorems, Uniqueness theorems, Existence theorems.

Existence theorems for the equation du/dt + Au = f(t), where A is an accretive operator in a general Banach space X, are typically proved by showing that limits of solutions of discrete approximations to the equation exist. Here the estimates required to show this convergence are exhibited as special cases of estimates relating solutions of difference schemes for partial derivative with respect to s + partial derivative with respect to tau to exact solutions.

AD-A011 024/7GA PC$3.25/MF$2.25
Illinois Univ Urbana Coordinated Science Lab
Convex Hulls of Finite Planar and Spatial Sets of Points.
Technical rept.,
F. P. Preparta, and S. J. Hong. Apr 75, 25p Rept nos. R-682, UILU-ENG-75-2217
Contract DAAB07-72-C-0259

Descriptors: *Convex sets, Algorithms, Theorems.
Identifiers: *Convex hulls, Computational complexity.

The convex hulls of planar and spatial sets of n points can be determined with O(n lg n) operations. The presented algorithms use the 'divide and conquer' technique and recursively apply a merge procedure for two nonintersecting convex hulls. It is also shown that any convex hull algorithm requires at least O(n lg n) operations, so that the time complexity of the proposed algorithms is optimal within a multiplicative constant.

AD-A011 090/8GA PC$3.75/MF$2.25
Pennsylvania State Univ University Park Applied Research Lab
Numerical Integration of Certain Improper Integrals with Complex Integrands.
Technical memo.,
R. E. Sheridan, Jr. 6 Feb 73, 41p Rept no. TM-73-19
Contract N00017-70-C-1407

Descriptors: *Numerical integration, Integrals, Complex variables, Turbine blades, Turbomachinery, Computer applications, Convergence.
Identifiers: *Unsteady flow.

In theoretical fluid mechanics, there is a class of problems associated with calculating the unsteady lift over a row of turbomachine blades that has for its solution a rather complicated function. This function consists of improper integrals whose integrands themselves are complex functions. These integrals cannot be directly evaluated, but previous investigators have successfully integrated them using approximate numerical methods. However, these numerical techniques proved to be inefficient and required substantial amounts of computer time. This report investigates some of the mathematical properties of these integrals and presents a numerical algorithm based upon the Gauss-Legendre method. The Gauss-Legendre scheme proved to be 3.7 times faster than Simpson's rule and the results obtained from the two methods were in good agreement.

AD-A011 106/2GA PC$4.25/MF$2.25
Harvard Univ Cambridge Mass Aiken Computation Lab
Marching Algorithms for Elliptic Boundary Value Problems II: The Non-Constant Coefficient Case.
Technical rept. Sep 74-May 75,
Randolph E. Bank. 28 May 75, 66p Rept no. TR-16-75
Contract N00014-75-C-0243
See also report dated Apr 75, AD-A009 954.

Descriptors: *Boundary value problems, *Finite difference theory, Matrices(Mathematics), Partial differential equations, Numerical integration, Iterations, Convergence, Polynomials, Computations.
Identifiers: *Marching algorithms, *Elliptic differential equations, Computational complexity.

The marching and generalized marching algorithms of Part I are extended to non-constant coefficient problems in which the elliptic operator is separable, once a suitable set of polynomials, which play a role analogous to the Chebyshev polynomials in the constant coefficient case, has been determined. These methods require O(n sup 2) and 0(n sup 2 log n/k) operations, respectively, to solve a problem on an n x n grid, and have numerical stability characteristics similar to their constant coefficient counterparts. Problems in which the elliptic operator is not separable are treated using a D'Yakanov-Gunn iteration in which a sequence of separable problems is solved. The rate of convergence of this iteration is shown to be essentially independent of n.

NTIS/PS-75/503/3GA PC$25.00/MF$25.00
National Technical Information Service, Springfield, Va.
Control Theory. Volume 1. 1970-1973 (A Bibliography with Abstracts).
Rept. for 1970-1973,
David W. Grooms. Jun 75, 207p*
See also Volume 2, NTIS/PS-75/504.

Descriptors: *Bibliographies, *Control theory, Automatic control, Feedback control, Adaptive systems, Mathematical programming, Economic models, Process control, Air traffic control, Production control, Flight control, Radar tracking.
Identifiers: Stochastic control, Estimation theory, Filtering theory.

Research is presented on automatic control, stochastic control, and feedback control with multidisciplinary applications. Some of the applications include flight control, production control, and process control. (Contains 202 abstracts).

NTIS/PS-75/504/1GA PC$25.00/MF$25.00
National Technical Information Service, Springfield, Va.
Control Theory. Volume 2. 1974-Jun 75 (A Bibliography with Abstracts).
Rept. for 1974-Jun 75,
David W. Grooms. Jun 75, 118p*
Supersedes COM-74-11433. See also Volume 1, NTIS/PS-75/503.

Descriptors: *Bibliographies, *Control theory, Automatic control, Feedback control, Adaptive systems, Mathematical programming, Economic models, Process control, Air traffic control, Production control, Flight control, Radar tracking.
Identifiers: Stochastic control, Estimation theory, Filtering theory.

Recent research is presented on automatic control, stochastic control, and feedback control with multidisciplinary applications. Some of the applications include flight control, production control and process control. (Contains 113 abstracts). See also NTIS/PS-75/503, Control Theory. Vol. 1, for research done from 1970-July 1974.

N75-22023/6GA PC$3.25/MF$2.25
Research Inst. of National Defence, Stockholm (Sweden).
Supplement to Report on Modified Linear Multistep Methods for a Class of Stiff Ordinary Differential Equations.
G. Bjurel. Nov 72, 20p FOA-2-C-2572-M4

Descriptors: *Differential equations, *Linearity, Iteration, Numerical analysis.

For abstract, see STAR 1313

N75-22025/1GA PC$3.25/MF$2.25
Jet Propulsion Lab., Calif. Inst. of Tech., Pasadena.
An Initial Feasibility Stage for Stoer'S Constrained Least Squares Algorithm.
C. L. Lawson. 15 Apr 75, 19p NASA-CR-142189, JPL-TM-33-724
Contract NAS7-100

Descriptors: *Algorithms, *Least squares method, *Vector analysis, Computer techniques, Equations, Matrices (Mathematics), Quadratic programming.

For abstract, see STAR 1313

N75-22027/7GA PC$7.00/MF$2.25
Centre National de la Recherche Scientifique, Toulouse (France). Lab. d'Automatique et d'Analyse des Systemes.
Nonlinear Filtering Theory: Application to Data Processing and Identification in Automation la Theorie du Filtrage Non Lineaire et Ses Applications au Traitement du Signal et a l'Identification en Automatique.
Ph.D. Thesis - Toulouse Univ.
G. Alengrin. 1974, 176p LAAS-PUBL-1109
Language in French.

Descriptors: *Dynamic characteristics, *Integral equations, *Nonlinear filters, *Stochastic processes, Data processing, Discrete functions, Dynamic models, Probability density functions.

For abstract, see STAR 1313

N75-22028/5GA PC$5.75/MF$2.25
Centre National de la Recherche Scientifique, Toulouse (France). Lab. d'Automatique et d'Analyse des Systemes.
Estimating and Filtering for Stochastic Modelization in Automation Estimation et Filtrage dans la Modelisation Stochastique en Automatique.
Ph.D. Thesis - Toulouse Univ.
J. Aguilar-martin. 1974, 147p LAAS-PUBL-1135
Language in French.

Descriptors: *Automation, *Nonlinear filters, *Stochastic processes, Adaptive filters, Discrete functions, Entropy, Markov processes, Probability density functions, Recursive functions.

For abstract, see STAR 1313

PB-241 752/5GA PC$3.25/MF$2.25
University of Southern California, Los Angeles. Dept. of Electrical Engineering.
Least Square Identifiability of Dynamic Systems.
Technical rept.,
Krister Martensson. Aug 73, 23p USC-113P71, USCEE-RB73-44
Contract AT(04-3)-113, Grant NSF-GP-29049
Sponsored in part by Grant PHS-GM-16197.

Descriptors: *Control theory, Nonlinear systems, Identification systems, White noise, Mathematical models, Theorems.
Identifiers: Time varying systems.

Sufficient conditions for local identifiability of parametric nonlinear dynamic systems are derived. It is assumed that the unknown parameters are determined by a least square method, and it is shown that uniqueness of the parameters is equivalent to complete observability of a linear time-varying dynamic system. The conditions are illustrated with numerical examples.

SAND-75-5184 PC$6.75/MF$2.25
Sandia Labs., Albuquerque, N.Mex.
Solving Non-Stiff Ordinary Differential Equations: The State of the ART.
L. F. Shampine, H. A. Watts, and S. M. Davenport. 73p CONF-7410107-1

Descriptors: (*Differential equations, *Numerical solution), Computer codes, Testing.

For abstract, see NSA 31 12, number 35665.

12B. Operations Research

AD-A010 733/4GA PC$3.75/MF$2.25
Air Force Inst of Tech Wright-Patterson AFB Ohio
Quadratic Programming Using Generalized Inverses.
Final rept. Jan 74-May 75,
Donn G. Shankland. May 75, 45p Rept no. AFIT-TR-75-2

Descriptors: *Quadratic programming, Inequalities, Matrices(Mathematics), Nonlinear programming, Lagrangian functions, Algorithms, Computer programs.
Identifiers: Inverse problems, Lagrange multipliers.

A method is presented for computing the optimum value of a quadratic functional subject to linear inequalities, which rapidly ascertains which, if any, of the inequalities are binding at the optimum point. The method resembles that of H. Theil and C. Van de Panne, but no combinatorial analysis needs be performed to isolate the binding constraints. All violated constraints are imposed as equalities, and those with positive Lagrangian multipliers are retained. Contradictory equalities are automatically resolved by the use of the generalized inverse. The method appears most useful in systems with large numbers of variables and constraints.

AD-A010 815/9GA PC$3.75/MF$2.25
Naval Postgraduate School Monterey Calif
Some Notes on Search, Detection and Localization Modeling.
Technical rept.,
R. Neagle Forrest. Apr 75, 38p Rept no. NPS-55Fo75-041
See also AD-214 252.

Descriptors: *Search theory, Decision theory, Sonar targets, Detection, Optimization, Probability distribution functions, Search and rescue.
Identifiers: *Detection theory, Signal detection, *Sonar detection, Resource allocation.

Contents:
- Detection theory and detection models;
- Decision criteria;
- Two detection models;
- Detection model applications;
- Search theory and search models;
- The probability of detection during a search;
- Experimental validation of detection models;
- Sweep width determination for a random track angle;
- A parallel sweep search model;
- The optimal allocation of search effort problem;
- Target position probability distributions which change in time.

AD-A010 973/6GA PC$4.25/MF$2.25
Rand Corp Santa Monica Calif
A Fractional Hypercube Decomposition Theorem for Multiattribute Utility Functions,
Peter H. Farquhar. Nov 74, 54p Rept no. P-5322

Descriptors: *Decision theory, Decomposition, Theorems.
Identifiers: *Utility functions, Utility theory, Decomposition theorems.

This paper establishes a fundamental decomposition theorem in multiattribute utility theory. The methodology uses fractional hypercubes to generate a variety of attribute independence conditions that are necessary and sufficient for various decompositions: the additive, Keeney's quasi-additive, Fishburn's diagonal, and others. The paper defines a fractional hypercube and introduces the corresponding multiple element conditional preference order. The main theorem is produced from the solution of equations which are derived from transformations of linear functions that preserve these conditional preference orders. The computations and scaling required in implementing the main result are demonstrated by obtaining four utility decompositions on three attributes: apex, diagonal, quasi-pyramid, and semicube. The methodology is illustrated with geometric structures that correspond to the fractional hypercubes.

AD-A010 974/4GA PC$3.75/MF$2.25
Rand Corp Santa Monica Calif
Pyramid and Semicube Decompositions of Multiattribute Utility Functions,
Peter H. Farquhar. Nov 74, 42p Rept no. P-5323

Descriptors: *Decision theory, Decomposition, Theorems.
Identifiers: *Utility functions, Utility theory, Decomposition theorems.

The fractional hypercube decomposition theorem for multiattribute utility functions is used to produce two new decompositions: the pyramid and the semicube. The pyramid decomposition resembles Keeney's quasi-additive decomposition but has nonseparable interactions between every pair of attributes. The semicube decomposition has nonseparable terms for all but the highest order interaction. These decompositions illustrate the diversity of results that can be generated with fractional hypercubes.

AD-A011 011/4GA PC$3.75/MF$2.25
Wisconsin Univ Madison Mathematics Research Center
A Convergence Theory for a Class of Anti-Jamming Strategies.
Technical summary rept.,
R. R. Meyer. Apr 75, 33p Rept no. MRC-TSR-1481
Contract DA-31-124-ARO(D)-462

Descriptors: *Nonlinear programming, Iterations, Convergence, Algorithms, Optimization, Theorems.
Identifiers: Convergence theorems.

A convergence theory for a class of anti-jamming strategies for nonlinear programming algorithms is presented. This theory generalizes previous results in this area by Zoutendijk, Topkis and Veinott, Mangasarian, and others, and is applicable to algorithms in which the anti-jamming parameter is fixed at some positive value, as well as to those in which it tends to zero. In addition, under relatively weak hypotheses, convergence of the entire sequence of iterates is proved.

AD-A011 032/0GA PC$3.25/MF$2.25
Hawaii Univ Honolulu Dept of Information and Computer Science
Optimal Resource Allocation and Scheduling Among Parallel Processes,
Art Lew. 1975, 18p ARO-11944.3-EL
Grant DAHC04-74-G-0110

Descriptors: *Parallel processing, *Dynamic programming, *Scheduling, Resource management, Optimization.
Identifiers: *Resource allocation, Time varying systems.

The problem of optimally allocating limited resources among competing processes may be formulated as a problem in finding the shortest path in a directed graph, provided a quantitative measure of the performance of each process as a function of its resource allocation can be suitably defined. If this measure is also a function of time, scheduling problems arise so that optimal allocations become time-varying and may depend upon various precedence relations or constraints among the processes. Dynamic programming approaches to such allocation and scheduling problems are presented in the context of parallel processing.

AD-A011 085/8GA PC$3.75/MF$2.25
Wisconsin Univ Madison Mathematics Research Center
Fuzzy Games.
Technical summary rept.,
J. P. Aubin. Apr 75, 44p Rept no. MRC-TSR-1480
Contract DA-31-124-ARO(D)-462

Descriptors: *Game theory, Convex sets, Economic models, Theorems.
Identifiers: *Fuzzy games, Convex functions.

Fuzzy games (i.e., cooperative games defined on the set of fuzzy coalitions of n players) are introduced. It is proved that the concepts of equilibrium, core and value of fuzzy games coincide.

UCRL-51726 PC$4.00/MF$2.25
California Univ., Livermore Lawrence Livermore Lab.
Mathematical Theory of Modeling.
G. C. Corynen. 19 Dec 74, 49p
Contract W-7405-Eng-48

Descriptors: Biology, Chemistry, Engineering, Mathematical models, Topology, Vectors.

For abstract, see NSA 31 12, number 35722.

13. MECHANICAL, INDUSTRIAL, CIVIL, AND MARINE ENGINEERING

13A. Air Conditioning, Heating, Lighting, and Ventilating

JPRS-64739 PC$3.25/MF$2.25
Joint Publications Research Service, Arlington, Va.
Soviet, Foreign Shipboard Air Conditioners,
G. S. Khordas. 12 May 75, 20p
Trans. of mono. Tekhnicheskoe Konditsionirovanie Vozdukha i Inertnykh Gazov na Sudakh, Leningrad, 1974 p12-29.

Descriptors: *Cargo ships, *Air conditioning equipment, Air conditioners, Structural members, Performance, Translations, USSR.

The report contains a description of Soviet and foreign shipboard air conditioning systems.

N75-21559/0GA PC$5.75/MF$2.25
Dynatherm Corp., Cockeysville, Md.
Design, Development and Testing of a Cryogenic Temperature Heat Pipe for the Icicle System.
Final Technical Report.
D. S. Trimmer. 31 May 74, 138p NASA-CR-143710, DTM-73-15
Contract NAS5-21563

Descriptors: *Breadboard models, *Cooling systems, *Cryogenic equipment, *Heat pipes, Experimental design, Heat transfer, Performance tests, Safety management.

For abstract, see STAR 1313

N75-21568/1GA PC$4.75/MF$2.25
Grumman Aerospace Corp., Bethpage, N.Y.
Design, Fabrication, and Testing of a Cryogenic Thermal Diode.
Interim Research Report.
J. Quadrini, and R. Kosson. Dec 74, 94p NASA-CR-137616
Contract NAS2-7492

Descriptors: *Heat pipes, *Heat transfer, *Systems engineering, *Thermodynamic properties, Equipment specifications, Performance prediction, Product development.

For abstract, see STAR 1313

PATENT-3 859 807
Not available NTIS
Atomic Energy Commission, Washington, D.C.

Cold Trap System for Recovering Condensable Gas from a Vessel to be Evacuated.
Patent,
Manson Benedict, William I. Thompson, and Robert L. Parrish. Filed 26 Aug 47, patented 14 Jan 75, 6p PAT-APPL-770 632
Government-owned invention available for licensing. Copy of patent available Commissioner of Patents, Washington, D.C. 20231 $0.50.

Descriptors: *Patents, *Cold traps, Uranium fluorides, Freezing, Gaseous diffusion process, Isotope separation, Vacuum apparatus.
Identifiers: PAT-CL-62-55-3.

The patent concerns a system for recovering a condensible gas by solidifying the same in a cold trap. The system is useful for recovering uranium hexafluoride gas in a gaseous diffusion system.

13B. Civil Engineering

AD-A010 633/6GA PC$5.25/MF$2.25
Cold Regions Research and Engineering Lab Hanover N H
Roadway Design in Seasonal Frost Areas.
Technical rept.,
T. C. Johnson, R. L. Berg, K. L. Carey, and C. W. Kaplar. Mar 75, 116p Rept nos. CRREL-TR-259, ISBN-0309-02307-6
Library of Congress Catalog No. LCCN-75-1796.

Descriptors: *Pavements, *Frost heave, Frost, Ice, Soil surveys, Melting, Freezing, Drainage, Flexible structures, Maintenance, Cracks, Roads, Damage, Traffic, Penetration, Construction, Thermal insulation.
Identifiers: Design, Flexible pavements, Rigid pavements, *Frost action, Pavement bases.

Highway engineers in seasonal frost areas have been aware for decades of the damaging effects that frost in the underlying support materials can have on pavement performance. The report of the Transportation Research Board describes and assesses the merit of current practice in roadway design in seasonal frost areas. Information is presented on the mechanisms of frost heaving and thaw weakening, the factors that contribute to frost problems, criteria for estimating frost susceptibility, surveying practices for locating areas of detrimental frost action, subgrade treatment and drainage to minimize the effects of frost action, and the structural design of pavements to accommodate the influences of frost action. Research needs in the area are identified.

AD-A010 636/9GA PC$4.25/MF$2.25
Army Engineer Waterways Experiment Station Vicksburg Miss
Outlet Works for Beltzville Dam, Pohopoco Creek, Pennsylvania: Prototype Tests.
Final rept.,
E. Dale Hart, and Clifford A. Pugh. May 75, 54p Rept no. AEWES-TR-H-75-10

Descriptors: *Dams, Pipes, Water flow, Flood control, Measurement, Hydrostatic pressure, Test equipment, Prototypes, Hydraulic models, Model tests, Correlation techniques, Pennsylvania.
Identifiers: *Outlet works, *Beltzville Dam, Design, Pohopoco Creek.

Prototype measurements made at Beltzville Dam were of special interest in that (a) the prototype is very similar in design to the model (which received extensive testing prior to prototype construction); (b) the long, straight conduit (approximately 178 diameters) lent itself to the development of a uniform gradient; and (c) a slug-type flow known as 'burping' had been experienced at the project. Tests were conducted in the 7-ft-diam flood-control conduit and in the water-quality control intake structure. Measurements included: (a) Hydrostatic pressures at seven piezometer pairs along the conduit, (b) pressure fluctuations in the conduit transition zone and downstream of the water-quality control gate, (c) air demand downstream of the control gates, (d) impact pressures in the water intake tower, (e) pressures in the converging vertical bend at the base of the wet well, and (f) high-speed motion pictures of the slug flow at the outlet portal. Good agreement was found between the comparable model and prototype data.

AD-A010 639/3GA PC$5.25/MF$2.25
Army Engineer Waterways Experiment Station Vicksburg Miss
Navigation Conditions at Uniontown Locks and Dam, Ohio River: Hydraulic Model Investigation.
Final rept.,
Louis J. Shows, and John J. Franco. May 75, 118p Rept no. AEWES-TR-H-75-9

Descriptors: *Dams, *Hydraulic models, Channel flow, Ohio River, Waterways, River currents, Kentucky.
Identifiers: Uniontown Dam, Uniontown(Kentucky), *Locks(Waterways), Wabash River.

As part of the program for the modernization of navigation facilities on the Ohio River, Uniontown Locks and Dam will replace some of the existing low-lift locks and dams and provide a navigable pool about 69.7 miles long to the Newburgh Locks and Dam. The structures will include two parallel locks along the right bank and a dam consisting of a gated spillway and fixed overflow section. A fixed-bed model, reproducing about 8.6 miles of the Ohio River channel, Wabash Island with the back channel around the island, and about one mile of the lower reach of the Wabash River and the adjacent overbank areas, was constructed to an undistorted scale of 1:120. The model investigation was concerned with the study of the composition and configuration of the dam, arrangement of the locks and lock walls, and navigation conditions in the lock approaches.

AD-A010 646/8GA PC$3.75/MF$2.25
Cold Regions Research and Engineering Lab Hanover N H
Accumulation of Atmospheric Pollutants Near Fairbanks, Alaska, During Winter.
Special rept.,
T. F. Jenkins, R. P. Murrmann, and B. E. Brockett. Apr 75, 30p Rept no. CRREL-SR-225

Descriptors: *Air pollution, *Measurement, Hydrocarbons, Carbon monoxide, Carbon dioxide, Condensation nuclei, Nitric acid, Sources, Traffic, Winter, Temperature inversion, Wind velocity, Air quality, Alaska.
Identifiers: Fairbanks(Alaska).

Concentrations of hydrocarbons, carbon monoxide, carbon dioxide, condensation nuclei and nitric oxide were monitored near Fairbanks, Alaska, at a selected location not under the direct influence of a local pollution source. The measurements were made continuously over a period of weeks during January and February 1973, the period when atmospheric pollution would be expected to be most severe. Accumulation and dissipation of the pollutants was found to be related to atmospheric inversion conditions, wind speed and daily traffic patterns. Maximum hourly average concentrations of hydrocarbons, carbon monoxide, carbon dioxide and condensation nuclei were 9.7 ppm, 22.1 pp, 482 ppm and more than 10,000 N/cu cm respectively. Comparative background levels are reported to be 1.4 ppm, 0.1 ppm, 320 ppm and 100-400 N/cu cm. Vehicle emissions appeared to be the primary source of the various pollutants.

AD-A010 708/6GA PC$3.25/MF$2.25
Coast Guard Research and Development Center Groton Conn
An Oil Slick Sampling System.
Final rept.,
Scott H. Fortier, and J. Richard Jadamec. Dec 74, 20p Rept no. CGR/DC-38/74 USCG-D-71-75

Descriptors: *Oil pollution, *Water pollution, Samplers, Oil spills, Chemical analysis, Test equipment, X ray spectroscopy, Infrared spectroscopy, Gas chromatography.
Identifiers: *Water pollution sampling, Water analysis.

An oil slick sampling system has been developed for routine sampling of oil spills for identification purposes. The system can effectively sample all types of oil spills, collecting enough sample for analysis by several analytical techniques. In 80% of the spills sampled, the system collected sufficient oil for analysis by fluorescence and infrared spectroscopic and thin layer and gas chromatographic techniques. In the remaining 20%, the system collected sufficient oil for at least two of the above-mentioned techniques. The developed system is lightweight, compact and inexpensive.

AD-A010 725/0GA PC$7.50/MF$2.25
Center for the Environment and Man Inc Hartford Conn
Guidelines for Material Placement in Marsh Creation.
Final rept.,
Lynn E. Johnson, and William V. McGuiness, Jr. Apr 75, 228p Rept no. CEM-4165-519 AEWES-CR-D-75-2
Contract DACW39-74-C-0094
Report on Dredged Material Research Program.

Descriptors: *Swamps, Construction, Instructions, Waste disposal, Classification, Site selection, Construction materials, Sediments, Sand, Gravel, Handling, Erosion, Ocean waves, Pipelines, Structural properties, Turbidity, Salt water, Fresh water.
Identifiers: *Marshes, *Dredge spoil, Dredging, Dikes, Settlement(Structural), Design, Environmental impacts.

The report presents a systematic set of guidelines for creating new marshes from dredged material under a variety of situations and constraints. New marshes are characterized on the basis of the frequency of dredging, confinement requirements and the need for surcharging. Pertinent information on important physical environmental factors, dredging and disposal operational practices, and engineering properties of dredged materials is used to develop guidelines for creating each type of marsh.

AD-A010 826/6GA PC$3.25/MF$2.25
Cold Regions Research and Engineering Lab Hanover N H
Calculating Temperature Regime of Earth Dams in Permafrost Regions (Raschet Temleraturnogo Rezhima Zemlianykh Plotin v Raionakh Rasirostranenila Mnogoletnel Merzloty),
I. S. Moiseev. Dec 74, 19p Rept no. CRREL-TL-450
Draft trans. of Gidrotekhnicheskoe Stroitelstvo (USSR) v29 p281-293 1959.

Descriptors: *Dams, *Permafrost, Earth fills, Temperature gradients, Atmospheric temperature, Melting, Numerical analysis, Interfaces, Heat transfer, Translations, USSR.
Identifiers: *Earth dams, Frozen soils.

One of the many features of earthfill dams in the regions of persistently frozen soils is the thermal regime in the body and base of the dam. After filling of the reservoir, part of the frozen

earth dam, under the effect of water's heat will thaw slowly but after the passage of a certain time depending on air temperature, temperature of water in the reservoir, material in dam body, and thickness of the permafrost layer, the thawing of the permafrost in the dam practically ceases. A steady state of temperature field sets in in which the upper part of the dam will be thawed while the central and lower sections will be frozen. In the planning of these dams, it is necessary to establish the advancement of the interface between the thawed and the frozen zone in the period after the filling of the reservoir and also the position of this boundary during a stationary state. The temperature fields within earth dams of various profiles at constant water termperatures in the reservoir and outside air can be calculated using equations presented in this paper.

AD-A010 872/0GA PC$5.25/MF$2.25
Environmental Health Lab Mcclellan AFB Calif
Wastewater Treatment Evaluation, Mather AFB, Ca.
Final rept.,
Chester F. Pauls. Jun 74, 109p Rept no. EHL-M-74M-8

Descriptors: *Sewage treatment, *Military facilities, Waste water, Filtration, Sewage, Waste(Industrial), Sources, Oxidation, Performance(Engineering), Nitrates, Oxygen, Water quality, Standards, Bacteria, Chemical properties, Metals, Pesticides, Sulfates, Phosphates, California.
Identifiers: *Water quality data, *Mather Air Force Base, Trickling filters, Industrial waste treatment, Biochemical oxygen demand, Chemical oxygen demand, Dissolved oxygen, Suspended solids.

A survey of the Wastewater Treatment Facilities at Mather AFB, CA was performed. Sources of industrial and domestic wastes were reviewed. Treatment facility performance and effluent characteristics were determined. Recommendations to improve the treatment of wastewater and to eliminate untreated discharges are presented. Performance specifications applicable to the wastewater treatment facility are provided.

AD-A010 920/7GA PC$8.50/MF$2.25
Holmes and Narver Inc Anaheim Calif
Cleanup, Rehabilitation, Resettlement of Enewetak Atoll - Marshall Islands. Volume I.
Environmental impact statement.
Apr 75, 266p
Contract DNA001-73-C-0155
See also Volume 3 dated Sep 74, AD-784 306 and Volume 2, AD-A010 921.

Descriptors: *Marshall Islands, *Rehabilitation, Environments, Radiation hazards, Radiation monitors, Debris, Disposal, Radiation effects, Public health, Economics, Agriculture, Food, Housing(Dwellings), Surveys.
Identifiers: *Enewetak Atoll, *Environmental impact statements.

The statement addresses a proposed project to remove and dispose of debris, structures, and soils which pose physical or radiation hazards or which pose obstructions to human habitation or the productive use of the land. The statement also addresses the problem of the economic and social measures required to resettle the Enewetak people in the Atoll after 25-30 years of absence. During the post World War II period, the Atoll was used as a proving grounds for development testing of modern weapons and weapons systems, particularly nuclear weapons. This resulted in the relocation of the inhabitants from the Atoll, the creation of hazards, both physical and radiological, and the consequent loss of much of the productive capacity of the Atoll. The intent of the project is to remove or reduce those existing conditions which would be a bar to safe habitation of the Atoll and to return the Enewetak people to the Atoll.

AD-A010 921/5GA PC$10.25/MF$2.25
Holmes and Narver Inc Anaheim Calif
Cleanup, Rehabilitation, Resettlement of Enewetak Atoll - Marshall Islands. Volume II.
Environmental impact statement.
Apr 75, 392p
Contract DNA001-73-C-0155
See also Volume 1, AD-A010 920 and Volume 2A, AD-A010 922.

Descriptors: *Marshall Islands, *Rehabilitation, Environments, Radiation hazards, Radiation monitors, Debris, Disposal, Radiation effects, Public health, Economics, Agriculture, Food, Housing(Dwellings), Surveys.
Identifiers: *Enewetak Atoll, *Environmental impact statements.

Contents:
Enewetak aerial radiological survey;
Report on recommendations for cleanup and rehabilitation;
Enewetak Atoll master plan for island rehabilitation and resettlement.

AD-A010 922/3GA PC$7.50/MF$2.25
Holmes and Narver Inc Anaheim Calif
Cleanup, Rehabilitation, Resettlement of Enewetak Atoll - Marshall Islands. Volume IIA.
Environmental impact statement.
Apr 75, 227p
Contract DNA001-73-C-0155
See also Volume 2, AD-A010 921 and Volume 3, AD-A010 923.

Descriptors: *Marshall Islands, *Rehabilitation, Environments, Radiation hazards, Radiation monitors, Debris, Disposal, Radiation effects, Public health, Agriculture, Food, Housing(Dwellings), Economics, Surveys.
Identifiers: *Enewetak Atoll, *Environmental impact statements.

The volume contains early return program operational plans, sanitary plans, letters, agreements and other documentation of the rehabilitation and resettlement program for the atoll.

AD-A010 923/1GA PC$3.75/MF$2.25
Holmes and Narver Inc Anaheim Calif
Cleanup, Rehabilitation, Resettlement of Enewetak Atoll - Marshall Islands. Volume III.
Environmental impact statement.
Apr 75, 43p
Contract DNA001-73-C-0155
See also Volume 2A, AD-A010 922 and Volume 4, AD-A010 924.

Descriptors: *Marshall Islands, *Rehabilitation, Environments, Radiation hazards, Radiation monitors, Debris, Disposal, Radiation effects, Public health, Economics, Agriculture, Food, Housing(Dwellings), Surveys.
Identifiers: *Enewetak Atoll, *Environmental impact statements.

The document is a summary of the Environmental Impact Statement (EIS) for a proposed project to clean up the Atoll of Enewetak and resettle the Enewetak people on the atoll. This summary has been prepared specifically for translation into the language of the Enewetak people.

AD-A010 924/9GA PC$8.50/MF$2.25
Holmes and Narver Inc Anaheim Calif
Cleanup, Rehabilitation, Resettlement of Enewetak Atoll - Marshall Islands. Volume IV.
Environmental impact statement.
Apr 75, 273p
Contract DNA001-73-C-0155
See also Volume 3, AD-A010 923.

Descriptors: *Marshall Islands, *Rehabilitation, Environments, Radiation hazards, Radiation monitors, Debris, Disposal, Radiation effects, Public health, Economics, Agriculture, Food, Housing(Dwellings), Surveys.
Identifiers: *Enewetak Atoll, *Environmental impact statements.

The document contains comments prepared by the Trust Territory Environmental Protection Board's Technical advisors in response to the Draft Environmental Impact Statement for the clean up, rehabilitation, resettlement of Enewetak Atoll, Marshall Islands.

AD-A010 941/3GA PC$3.25/MF$2.25
Rand Corp Santa Monica Calif
Toward a Policy Planner's View of the Urban Settlement System,
Peter A. Morrison. Jan 75, 22p Rept no. P-5357

Descriptors: *Urban areas, *Population, Management planning and control, Culture, Migration, Policies, Statistical distributions, Assessment, Urban planning, Attitudes(Psychology), Interactions.
Identifiers: Urban growth, Government policies.

This paper considers the interplay of three types of influences that affect the national system of urban settlement: (1) Cultural predispositons, the basic values and axioms that define a society's aspirations and direction, even though they may seldom describe its actual performance; (2) Migratory predispositions, the highly focused but as yet inactivated streams of potential migration that are defined by the history of past population movements; (3) Government activities and programs, whose inadvertent secondary effects exert a powerful but undirected influence on the redistribution of population.

AD-A010 980/1GA PC$3.75/MF$2.25
Rand Corp Santa Monica Calif
The Effectiveness of Near-Term Tactics for Reducing Vehicle Miles Traveled: A Cast Study of the Los Angeles Region,
William T. Mikolowsky, William L. Stanley, and Bruce F. Goeller. Dec 74, 44p Rept no. P-5336

Descriptors: *Transportation, *Urban planning, *Management planning and control, Economics, Models, Mathematical prediction, Mobility, Impact, California.
Identifiers: *Vehicle miles traveled, *Los Angeles(California), Alternatives, Transportation models, Bus lines, Disincentives, Car pools, Traffic reduction.

An analysis of near-term transportation alternatives for the Los Angeles region using the Policy-Oriented Urban Transportation Model developed by Rand is presented. The predicted effect on regional vehicle miles traveled of various levels of bus system improvements, carpooling incentives, and economic disincentives such as, mileage surcharges or increasing gasoline prices, and parking surgharges are shown. Changes in personal mobility as reflected in changes in the total number of person trips are also included.

AD-A010 984/3GA PC$3.25/MF$2.25
Rand Corp Santa Monica Calif
Local Growth Control Versus the Freedom to Migrate,
Peter A. Morrison, and Judith P. Wheeler. Dec 74, 9p Rept no. P-5330

Descriptors: *Urban areas, *Migration, *Attitudes(Psychology), Population, Community relations, Mobility, Policies, Growth(General), Limitations, Demography, Management planning and control.

Just five years ago, America was concerned, naively, about designing national policies to change the pattern of settlement. There was talk of siphoning off excess population from congested cities by simply constructing new cities here and there around the national landscape. Interest in reversing the age-old flow of migrants from rural to urban areas was renewed, on the basis that it is good to preserve a rural-urban balance in the national population. Today the focus has changed from a national perspective to a local one, for it is on a local scale that the consequences of people moving about are directly felt. Many communities are now stubbornly challenging some accepted inalienable rights by their reluctance to accept the principle that growth is good.

AERE-R-6816(Rev.) PC$6.25/MF$2.25
UKAEA Research Group, Harwell. Atomic Energy Research Establishment.
Use of Surface-Active Chemicals in Pump-Ashore Schemes and Suction Dredgers.
P. Biddle, and J. H. Miles. Jan 75, 62p
U.S. Sales Only.

Descriptors: (*Surface waters, *Sediments), (*Surfactants, *Uses), Acrylamide, Bench-scale experiments, Economics, Origin, Pumps, Rivers, Salinity, Soils.

For abstract, see NSA 31 12, number 35667.

AERE-R-7907 PC$4.75/MF$2.25
UKAEA Research Group, Harwell. Atomic Energy Research Establishment.
Effect of Polyacrylamide on the Settling of Thames Mud.
P. Biddle, T. V. Healy, and H. A. C. McKay. Jan 75, 34p
U.S. Sales Only.

Descriptors: (*Surface waters, *Sediments), (*Surfactants, *Uses), Acrylamide, Mixing, Mixtures, Seawater, Soils, United kingdom.

For abstract, see NSA 31 12, number 35668.

COM-75-10647/6GA PC$3.25/MF$2.25
New York Sea Grant Advisory Service, Albany.
Shoreline Protection Guide for Property Owners.
Insight no. 2,
Peter Sanko. 1975, 22p* NYSSGP-AS-75-001 NOAA-75042910

Descriptors: *Shore protection, *Beach erosion, *Sea walls, Lake waves, Dunes, Littoral drift, Groins(Structures), Breakwaters, Harbor structures, Coasts, Salt water, Erosion control, Bulkheads, Revetments, Vegetation, Great Lakes.
Identifiers: Sea Grant program.

The guide reports the basic physical processes of erosion/deposition, such as wind, waves, currents, littoral drift, and tides. Common shore protection structures are explained, as well as their limitations and possible side effects. Bulkheads, revetments, seawalls, groins, breakwaters, protective beaches, dunes, and vegetative methods are examined.

COM-75-10691/4GA PC$4.25/MF$2.25
National Bureau of Standards, Washington, D.C. Applied Mathematics Div.
The NBS Computerized Carpool Matching System: Users' Guide.
Final technical rept.,
Judith F. Gilsinn, and Susan Landau. Dec 74, 65p* NBSIR-74-633

Descriptors: *Urban transportation, *Passenger transportation, *Coordination, Management information systems, Personnel, Travel patterns, Travel demand, Computer programs, Data processing, Project management, Energy conservation, Fuel consumption.
Identifiers: *Car pools, UNIVAC 1108 computers.

The report includes flowcharts, input/output formats, and program listings for the programs, plus details of the manual process for coordinate coding. The matching program produces, for each person desiring it, a list of others residing within a pre-specified distance of him, and is thus applicable to a single work destination having primarily one work schedule. The system is currently operational on the National Bureau of Standards' UNIVAC 1108 computer and was run in March of 1974, producing lists for about 950 employees in less than four minutes computer time. Subsequent maintenance of the system will be carried out by the NBS Management and Organization Division.

COM-75-10697/1GA PC$4.75/MF$2.25
National Bureau of Standards, Washington, D.C. Applied Mathematics Div.
Path Finding Algorithms and Data Structures for Point-to-Point Trip Management.
Final technical rept.,
Judith F. Gilsinn, Patsy B. Saunders, and Martin H. Pearl. Jan 75, 85p NBSIR-75-676
Sponsored in part by Urban Mass Transportation Administration, Washington, D.C. Systems Analysis and Evaluation Div.

Descriptors: *Urban transportation, *Transportation models, *Urban planning, Scheduling, Network flows, Queueing theory, Data processing, Information systems.
Identifiers: Shortest path method, Data bases, PTPTM(Point to Point Trip Management), Point to point trip management, Trip planning.

This report identifies and characterizes the data base and computer software requirements for a Point-to-Point Trip Management (PTPTM) System which provides detailed transit trip itineraries in response to inquiries made by prospective passengers. The requirements fall into four categories, corresponding to successive stages in processing such an inquiry: (1) reception and interpretation, (2) location and connection, (3) path calculation, and (4) report. Procedures for path calculation are discussed in detail, including techniques for improving shortest path algorithm performance both through optimized computational schemes and through special methods of representing and manipulating the data base describing transit routes and schedules.

COM-75-10734/2GA PC$4.25/MF$2.25
Earth Satellite Corp., Washington, D.C.
A Study of the Surface Fluid Flow Characteristics of the New York Bight and the Development of Research Data Display Techniques.
Final rept.,
Robert T. Macomber, Robert L. Mairs, and Dennis T. Stanczuk. 15 Oct 74, 69p NOAA-75050705
Grant NOAA-3-35336

Descriptors: *Water pollution, *Ocean currents, *Data processing, *Remote sensing, *New York Bight, Circulation, Sewage disposal, Scientific satellites, Littoral drift, Dispersing, Coasts, Dyes, Spoil, Tidal currents, Data acquisition, Environmental quality.
Identifiers: ERTS-1 satellite.

In response to the need for (1) a demonstration of remote sensing data acquisition applied to studies of the coastal marine ecosystem in the New York Bight area, and (2) a demonstration of the remote sensing based information products which can be provided to area users, Earth Satellite Corporation (EarthSat) entered into a contract agreement with the Spacecraft Oceanography Group (SPOC) of NOAA to demonstrate the applicability of remote sensor records to the study of circulation, dispersion, and related environmental characteristics, and to develop remote sensor-derived products for potential users in the New York Bight area.

LBL-3223 PC$4.00/MF$2.25
California Univ., Berkeley Lawrence Berkeley Lab.
Current Methods in Air Quality Measurements and Monitoring.
C. D. Hollowell, R. D. McLaughlin, and J. A. Stokes. Nov 74, 15p CONF-741213-16
Contract W-7405-eng-48

Descriptors: (*Air pollution, *Monitoring), (*Sulfur oxides, Monitoring), (*Carbon monoxide, Monitoring), (*Nitrogen oxides, Monitoring), Aerosols, Hydrocarbons, Measuring methods, Quantitative chemical analysis, Sampling, Surface air.

For abstract, see NSA 31 12, number 33169.

NTIS/PS-75/444/0GA
PC$25.00/MF$25.00
National Technical Information Service, Springfield, Va.
Highway Traffic Noise (A Bibliography with Abstracts).
Rept. for 1964-May 75,
Edward J. Lehmann. May 75, 106p*
Supersedes COM-74-10971.

Descriptors: *Bibliographies, *Noise pollution, *Highways, *Urban planning, Motor vehicles, Acoustic measurement, Noise(Sound), Traffic noise, Urban transportation, Vehicular traffic, Environmental engineering, Land use zoning, Pavements, Tires, Engine noise.
Identifiers: Environmental quality.

The cited reports cover all aspects of highway noise and its reduction. Included are topics on transportation noise models, noise control through urban planning, the effects of noise on the community, the causes of noise, and noise barrier design.

NTIS/PS-75/484/6GA
PC$25.00/MF$25.00
National Technical Information Service, Springfield, Va.
Food Processing Waste Treatment (A Bibliography with Abstracts).
Rept. for 1964-Jun 75,
Robena J. Brown. Jun 75, 203p*
Supersedes NTIS/PS-74/083.

Descriptors: *Food processing, *Bibliographies, *Industrial waste treatment, *Water pollution control, Dairies, Canneries, Seafood, Materials recovery, Air pollution control, Vegetables, Fruits, Meat, Dairy products.
Identifiers: Seafood industry, Slaughtering house wastes, Rendering plants, Meat packing wastes.

Cited are air pollution, solid wastes, and water pollution control studies for all types of food processing including canning, rendering, meat packing, fish, vegetable, and dairy products processing. (Contains 198 abstracts).

NTIS/PS-75/491/1GA
PC$25.00/MF$25.00
National Technical Information Service, Springfield, Va.
Aircraft Air Pollution (A Bibliography with Abstracts).
Rept. for 1964-Jun 75,
Kirk G. Werner. Jun 75, 198p*

Descriptors: *Air pollution, *Bibliographies, *Aircraft, Turbojet engines, Aircraft engines, Supersonic transports, Airports, Stratosphere, Combustion chambers, Exhaust gases, Abstracts.

Identifiers: Emissions factors, Air pollution control, Aircraft exhaust.

All aspects of aircraft and aircraft engine air pollution are covered, including references on emissions data and emission factors, pollution control and abatement, and pollutant concentrations and movement around airports and flight corridors. Stratospheric pollution and the effects of supersonic transport traffic are also covered. (Contains 193 abstracts).

NTIS/PS-75/529/8GA PC$25.00/MF$25.00
National Technical Information Service, Springfield, Va.
Air Quality Monitoring (A Bibliography with Abstracts).
Rept. for 1970-Jun 75,
Kirk G. Werner, and Edward J. Lehmann. Jun 75, 186p*
Supersedes COM-74-11360.

Descriptors: *Bibliographies, *Monitors, Air pollution, Design, Gas Sampling, Site surveys, Calibrating, Remote sensing, Particles, Combustion products, Urban areas, Nitrogen dioxide, Sulfur dioxide, Carbon monoxide, Hydrocarbons, Exhaust gases.
Identifiers: *Air pollution sampling, Monitoring.

The selected research covers various aspects of air pollution monitoring including sensor design, site selection, operation criteria, and calibration. (Contains 181 abstracts).

NTIS/PS-75/530/6GA PC$25.00/MF$25.00
National Technical Information Service, Springfield, Va.
Airport Noise (A Bibliography with Abstracts).
Rept. for 1964-Jun 75,
Guy E. Habercom, Jr. Jun 75, 143p*
Supersedes NTIS/PS-74/098.

Descriptors: *Bibliographies, *Airports, *Aircraft noise, *Noise pollution, Noise exposure, Noise abatement, Noise reduction, Physiological effects, Urban planning, Air traffic, Abstracts.
Identifiers: *Preferential runway systems.

Aircraft created noise, noise intensity, noise exposure, and physiological effects, all in airport environments, are presented in these Government-sponsored research reports. (Contains 138 abstracts).

NTIS/PS-75/531/4GA PC$25.00/MF$25.00
National Technical Information Service, Springfield, Va.
Animal Waste Pollution and Its Control (A Bibliography with Abstracts).
Rept. for 1964-May 75,
Robena J. Brown. Jun 75, 122p*
Supersedes COM-74-11203.

Descriptors: *Agricultural wastes, *Bibliographies, *Water pollution control, *Industrial waste treatment, Livestock, Animals, Beef cattle, Poultry, Food processing, Dairy cattle, Fertilizers, Ecology, Swine, Residues, Surface water runoff.
Identifiers: *Feedlot wastes, *Manure, Slaughtering house wastes.

The topics cover studies on the pollution and pollution control of animal wastes and animal processing wastes. Included are reports on feedlot waste pollution and control, pollution from manure used in fertilization, water runoff from farms, dairy and livestock wastes, rendering wastes, poultry processing wastes, ecological aspects, and hoghouse waste control. (Contains 117 abstracts).

NTIS/PS-75/534/8GA PC$25.00/MF$25.00
National Technical Information Service, Springfield, Va.
Noise Pollution Economics (A Bibliography with Abstracts).
Rept. for 1964-Sep 74,
Edward J. Lehmann. Jun 75, 32p*
Supersedes NTIS/PS-74/093.

Descriptors: *Bibliographies, *Noise pollution, *Economic analysis, Noise reduction, Abstracts, Transportation, Turbomachinery, Nacelles, Metal industry, Urban areas, Government policies, Planning, Management.

The economics of noise pollution control and management is presented for industry, urban areas, Government planning, and transportation. (Contains 27 abstracts).

NTIS/PS-75/535/5GA PC$25.00/MF$25.00
National Technical Information Service, Springfield, Va.
Air Pollution Economics (A Bibliography with Abstracts).
Rept. for 1964-Jun 75,
Edward J. Lehmann. Jun 75, 245p*
Supersedes NTIS/PS-74/091. See also NTIS/PS-75/534.

Descriptors: *Bibliographies, *Air pollution, *Economic analysis, Abstracts, Industries, Transportation, Urban areas, Government policies, Industrial wastes, Planning, Management.
Identifiers: *Air pollution abatement, *Air pollution economics.

Presented are abstracts covering studies on the economics of air pollution control and management. This includes the economics involved with industrial waste treatment, urban planning, Government planning, and automobile and mass transportation. Specific cost studies have been excluded unless they apply to an industry or entire region. (Contains 240 abstracts).

NTIS/PS-75/536/3GA PC$25.00/MF$25.00
National Technical Information Service, Springfield, Va.
Solid Waste Disposal Economics (A Bibliography with Abstracts).
Rept. for 1964-Jun 75,
Edward J. Lehmann. Jun 75, 106p*
Supersedes NTIS/PS-74/092. See also NTIS/PS-75/535.

Descriptors: *Bibliographies, *Solid waste disposal, *Economic analysis, Solid waste management,Abstracts, Garbage disposal, Sewage disposal, Refuse disposal, Industries, Transportation, Urban areas, Reclamation, Planning, Recycled waste products.
Identifiers: Waste recycling.

The topics included in this bibliography of Federally-funded research include all aspects of the economics of solid waste disposal and abatement, including studies concerning industries, transportation, urban planning, and recycling. (Contains 101 abstracts).

NTIS/PS-75/537/1GA PC$25.00/MF$25.00
National Technical Information Service, Springfield, Va.
Water Pollution Economics (A Bibliography with Abstracts),
Rept. for 1964-Jun 75,
Edward J. Lehmann. Jun 75, 285p*
Supersedes NTIS/PS-75/094. See also NTIS/PS-75/536.

Descriptors: *Bibliographies, *Water pollution, *Economic analysis, Abstracts, Industries, Urban areas, Planning, Water resources, Industrial waste treatment, Government policies, Management.
Identifiers: *Water pollution economics.

The cited reports concern all aspects of the economics of water pollution control and management. This covers the economics involved with industrial clean up, Government planning, resource management, and urban planning. Sewage treatment economics are not included. Included are the majority of EPA's development documents which discuss the best technology to meet effluent standards for various industries. (Contains 280 abstracts).

N75-21830/5GA PC$3.25/MF$2.25
National Aeronautics and Space Administration. Lewis Research Center, Cleveland, Ohio.
Elemental Composition of Suspended Particulates as Functions of Space and Time in Cleveland, Ohio.
H. E. Neustadter, R. B. King, and J. S. Fordyce. 1975, 14p NASA-TM-X-71688, E-8288
Conf-Proposed for Presentation at 68TH Ann. Meeting of the Air Pollution Control Assoc., Boston, 15-20 Jun. 1975.

Descriptors: *Aerosols, *Air pollution, *Ohio, Air sampling, Meteorological parameters, Neutron activation analysis, Statistical analysis, Wind (Meteorology).

For abstract, see STAR 1313

N75-21831/3GA PC$3.75/MF$2.25
National Aeronautics and Space Administration. Lewis Research Center, Cleveland, Ohio.
Air Pollution Source Identification.
J. S. Fordyce. 1975, 35p NASA-TM-X-71704, E-8313
Conf-Presented at the Sources and Emissions Workshop of the 2D Interagency Comm. On Marine Sci. And Eng. Conf., Argonne, Ill., 25-27 Mar. 1975.

Descriptors: *Air pollution, *Air sampling, *Pollution monitoring, Exhaust gases, Remote sensors, Trace elements, Wind (Meteorology).

For abstract, see STAR 1313

PAT-APPL-558 040/GA PC$3.25/MF$2.25
Department of the Navy Washington D C
Biodegradation of Oil on Water Surfaces.
Patent Application,
R. Bartha. Filed 13 Mar 75, 13p Rept no.
Government-owned invention available for licensing. Copy of application available NTIS.

Descriptors: *Biodeterioration, Microbiology, Bacteria, Oil spills, Patents, Nitrates, Phosphates.
Identifiers: *Patent applications, *Oil pollution removal, Nutrients.

The patent application concerns the biodegradation of oil on water surfaces. Free-floating oil slicks on bodies of sea and fresh water are disposed of by microbial degradation at a greatly enhanced rate by applying the essential microbial nutrients, nitrogen and phosphorous, to the oil slick in a form that dissolves in or adheres to the oil and thus selectively stimulates the activity of oil-metabolizing microorganisms.

PB-231 665-30/GA PC$4.25/MF$2.25
Environmental Protection Agency, Washington, D.C.
Summaries of Foreign Government Environmental Reports.
Feb 75, 60p
Also available on subscription $35.00/year domestic and $45.00/year foreign.

Descriptors: *Environments, *Pollution, Radiation hazards, Pesticides, Noise(Sound), Air pollution, Water pollution, Solid waste disposal, Australia, Belgium, Brazil, Canada, Denmark, France, Germany, Italy, Japan, USSR, Norway, Switzerland, Romania, Tunisia, Yugoslavia, Great Britain, Ireland, Bibliographies, Abstracts, Translations.

This is a monthly announcement listing of foreign documents received through exchange agreements. This series, devoted to summaries of government reports and other pertinent literature and focusing on the legislative, organizational, economic, and social aspects of environmental protection, supplements foreign scientific and technical literature abstracted by other EPA information serivces.

PB-231 665-31/GA PC$3.75/MF$2.25
Environmental Protection Agency, Washington, D.C.
Summaries of Foreign Government Environmental Reports. Number 31.
Mar 75, 48p
See also report dated Jan 74, PB-231 665.
Also available on subscription $35.00/year domestic, $45.00/year foreign.

Descriptors: *Environments, *Pollution, Air pollution, Noise(Sound), Pesticides, Radiation hazards, Solid waste disposal, Water pollution, Belgium, Brazil, Bulgaria, Canada, China, France, Germany, Iran, Israel, Japan, Kuwait, Romania, USSR, Algeria, Switzerland, Australia, Colombia, Ecuador, Greece, Hungary, Spain, Sweden, Venezuela, Mexico, Poland, Abstracts, Bibliographies, Translations.

This is a monthly announcement listing of foreign documents received through exchange agreements. This series, devoted to summaries of government reports and other pertinent literature and focusing on the legislative, organizational, economic, and social aspects of environmental protection, supplements foreign scientific and technical literature abstracted by other EPA information services.

PB-241 003/3GA PC$3.75/MF$2.25
Chesapeake Research Consortium, Inc., Baltimore, Md.
Effects of Waste Water on Estuarine Ecosystems,
David A. Flemer, and Donald R. Heinle. Jun 74, 33p CRC-Pub-33 NSF/RA/E-74-034
Grant NSF-GI-38972
Also pub. as Maryland Univ., Solomons. Natural Resources Inst. Ref. No. 74-79. Prepared in cooperation with Virginia Inst. of Marine Science, Gloucester Point.

Descriptors: *Water pollution, *Patuxent River Estuary, Sewage, Nutrients, Algae, Primary biological productivity, Chlorophylls, Waste water, Carbon 14, Plankton, Concentration(Composition), Sampling, Inorganic nitrates, Inorganic phosphates.
Identifiers: *Sewage treatment effluents, Water pollution effects(Plants), Water pollution effects(Animals), Ecosystems, Water quality data.

Recent increases in algae, measured as concentration of chlorophyll a, in the Patuxent River estuary appear to have occurred as a consequence of increased loading by sewage in the upper watershed. The increases in concentration of chlorophyll were observed downstream from the turbid sediment-trap portion of the estuary, an impact distant from the points of addition. Primary production, measured by the 14C method, increased also as did zooplankton biomass. Samples of water from the Sandy Point area of the upper Chesapeake Bay were enclosed in 750-liter (200-gallon) polyethylene microcosms, enriched with treated sewage, and ensuing events followed. While the predictions from the microcosms have been fully validated, clear effects on several parameters were noted. Phosphate appeared to be the major limiting nutrient in these experiments. Enriched microcosms developed higher concentrations of zooplankton and chlorophyll a and rates of primary production, permitting predictions of effects of the sewage treatment plant under various loads.

PB-241 444/9GA PC$4.25/MF$2.25
Lane County Government, Eugene, Oreg.
Lane County USAC Project. TCDMS User's Utilities Manual. A Description of the TCDMS Utilities for Application Programmers and Terminal Operators.
17 Mar 75, 53p* USAC-LCG2-0010
Contract HUD-H-2073
Report on Inter-Regional Information System/Telecommunications/Data Management System.

Descriptors: *Local government, *Urban information systems, *Computer technology, *Manuals, Computer operators, Information retrieval, Management information systems, Computer programming, Telecommunication.
Identifiers: Lane County(Oregon), USAC project, Telecommunications data management system.

This manual is from a USAC series produced by the Lane County Regional Information Systems Department. It provides the information necessary to assist the application programmer and/or terminal operator in using the TCDMS User's Utilities.

PB-241 447/2GA PC$3.75/MF$2.25
Lane County Government, Eugene, Oreg.
Lane County USAC Project. TCDMS Operations Manual. A Reference Guide for Computer Operators.
18 Feb 75, 36p* USAC-LCG2-0008
Contract HUD-H-2073
Report on Inter-Regional Information System/Telecommunications/Data Management System.

Descriptors: *Local government, *Urban information system, *Telecommunication, *Computer personnel, Manuals, Data processing, Management information systems, Operations.
Identifiers: Lane County(Oregon), USAC project, Telecommunications data management system.

This manual is from a USAC series produced by the Lane County Regional Information Systems Department. It provides the information necessary to assist the computer operator in running TCDMS at his or her installation.

PB-241 448/0GA PC$4.75/MF$2.25
Lane County Government, Eugene, Oreg.
Lane County USAC Project. TCDMS Application Programmers Manual (FORTRAN). A Reference Manual for Application Programmers Coding in IBM FORTRAN IV.
24 Feb 75, 87p* USAC-LCG2-0009
Contract HUD-H-2073
Report on Inter-Regional Information System/Telecommunications/Data Management System.

Descriptors: *Local government, *Urban information system, *telecommunication, *Computer programming, Manuals, Computer personnel, Information retrieval, Management information systems, FORTRAN.
Identifiers: USAC project, Lane County(Oregon), Telecommunications data management system, FORTRAN 4 programming language.

This manual is from a USAC series produced by th Lane County Regional Information Systems Department. It provide the information necessary to assist the TCDMS Application Programmer in writing FORTRAN programs to run under TCDMS control.

PB-241 507/3GA PC$4.75/MF$2.25
North Carolina Univ., Greensboro.
Effects of Air Pollutants on Textile Fibers and Dyes.
Final rept.,
James B. Upham, and Victor S. Salvin. Feb 75, 88p* EPA/650/3-74-008
Contract PH-22-68-2

Descriptors: *Public opinion, *Textiles, *Decomposition, *Ozone, *Sulfur dioxide, *Nitrogen oxides, *Particles, Fibers, Deterioration, Fading, Discoloration, Dyes, Nylon fibers, Cellulosic resins, Polyester fibers, Cotton fibers.
Identifiers: *Air pollution effects(Materials), Soiling index.

This document presents: (1) a comprehensive survey of the damaging effects of air pollutants - particulates, SOx, NOx, and ozone - on textile fibers and dyes, and (2) the results and assessment of a public opinion survey to primarily measure consumer awareness of the detrimental effects of air pollution on household textile products. Nearly 100 references are cited and many of the research investigations are detailed and discussed. The survey found that air pollution represents a significant problem area for the textile industry and many consumers. The public opinion survey revealed that consumer awareness of the major air pollution effects on household textile products is poorly established and generally lacking.

PB-241 581/8GA PC$3.75/MF$2.25
American Standard, Inc., New Brunswick, N.J.
Suspended Solids Monitor.
Final rept. Mar 69-Aug 70,
John W. Liskowitz, Gerald J. Franey, and Joseph Tarczynski. Apr 75, 48p EPA/670/2-75-002
Contract DI-14-12-494

Descriptors: *Sewage treatment, *Water analysis, Particles, Measuring instruments, Instrumentation, Depolarization, Light(Visible radiation), Polarized electromagnetic radiation, Qualitative analysis, Sludge, Fluid flow.
Identifiers: *Suspended solids, Sludge treatment.

A method for measuring concentration of suspended solids in liquid media, based on depolarization of backscattered polarized light, has been developed and instrumented. Feasibility studies and field evaluation of the instrument, using sewage influent, effluent and sludge, showed that there is a specific relationship between concentration of solid particles and polarization ratio. It was also shown that the relationship is independent of size distribution and density of particles, color of particles or solution, sludge consistency, velocity, and build-up of solids on the optical window. The field evaluation results indicate that this instrument provides a continuous instantaneous in situ measurement of suspended solids concentrations in combined sewers and other wastewater flows.

PB-241 583/4GA PC$5.25/MF$2.25
Environmental Technology Assessment, Inc., Oak Brook, Ill.
Cost Effectiveness of Transportation Control Strategies for Carbon Monoxide.
Final rept.,
Jay E. Norco, Roger K. Raufer, and Kevin G. Croke. Oct 74, 124p IIEQ-74-59

Descriptors: *Air pollution abatement, *Carbon monoxide, *Urban transportation, Inspection,

Preventive maintenance, Vehicular traffic control, Traffic engineering, Catalytic convertors, Trucks, Automobiles, Transportation planning, Cost effectiveness, Systems analysis, Feasibility, Illinois.
Identifiers: Retrofit devices, *Chicago(Illinois), Motor vehicle inspection.

This report summarizes the existing data and analyses related to the emission reduction effectiveness, costs, and feasibility of implementing several alternative strategies for reducing carbon monoxide in the Chicago central business district. An attempt made to develop combinations of strategies designed to achieve the National Ambient Air Quality Standards for carbon monoxide based upon a proportional or rollback model using 1973 air quality data.

PB-241 709/5GA PC$5.75/MF$2.25
Oregon State Univ., Corvallis. Water Resources Research Inst.
Land and Water Use in Oregon.
Research rept.
Jul 74, 130p SEMIN-WR-019-74 W75-07507, OWRT-A-999-ORE(17)

Descriptors: *Land use, *Water consumption, *Meetings, *Oregon, Water pollution control, Computerized simulation, Flood plains, Consumer protection, Parks, Water law, Demand(Economics), Willamette River, Septic tanks, Ground water, Aquifers, Coasts, Water quality, Sewage treatment.
Identifiers: Water utilization.

Oregon land and water problems were discussed in a series of 10 weekly seminars. Subjects included: (1) The practical limits of pollution control technology, (2) computer simulation of land use dynamics, (3) evolving patterns of flood plain use, (4) adjudication in land-water disputes, (5) consumer protection and land use, (6) Willamette River parks system, (7) the septic tank's role in land use, (8) constitutional restrictions on coastal land use, (9) Oregon's approach to groundwater investigations, and (10) water quality in eastern Oregon.

PB-241 742/6GA PC$4.25/MF$2.25
Virginia Polytechnic Inst. and State Univ., Blacksburg. Water Resources Research Center.
Recovery and Reuse of Coagulants from Treatment of Water and Wastewater,
Paul H. King, Ben H. H. Chen, and R. Kenneth Weeks, Jr. Mar 75, 58p VPI-WRRC-Bull-77 W75-07600, OWRT-A-040-VA(3)

Descriptors: *Water treatment, *Sewage treatment, *Coagulants, *Reclamation, Chemical removal(Sewage treatment), Aluminum inorganic compounds, Iron inorganic compounds, Sludge disposal, Water treatment, Capitalized costs, Separation, Precipitation(Chemistry), Dewatering, Alums.
Identifiers: Waste recycling.

In laboratory experiments, procedures were tested for economical recovery of hydrolyzed metallic coagulants used in treatment of polluted surface waters and selected wastewater discharges. Investigations focused on treatment systems using aluminum and iron salts as coagulants and precipitants. The experiments sought answers to how much coagulant can be recovered, what is the best means of separating and dewatering the remaining solids, and how effective is the recovered coagulant during reuse. An economic analysis estimated the capital cost of implementing the process, and determined what savings may be expected in chemical costs. A computer model was developed for determining the economic break-even point with reference to treatment plant capacity. Research findings indicate that recovery of both aluminum and iron salts is technically feasible, though the potential for aluminum recovery appears greater. Among additional benefits from the process described are large reductions in sludge volume and improved settleability and filterability of the remaining sludge. Laboratory tests indicate that the efficiency of recovered metal in coagulating suspended solids is not materially reduced from that of fresh coagulant.

PB-241 754/1GA PC$7.50/MF$2.25
Kentucky Water Resources Inst., Lexington.
Economic Analysis of Flood Detention Storage by Digital Computer.
Research rept.,
James Ray Villines. 1968, 250p RR-9 W75-07518, OWRT-A-001-KY(5)
Contract DI-14-01-0001-1085

Descriptors: *Flood control, *Reservoirs, *Economic effects, Computer programs, Flood plains, Water storage, Flood routing, Licking River, Flood plain zoning, FORTRAN, Land use, Flooding, Kentucky.
Identifiers: *Detention reservoirs, Nonstructural alternatives, FORTRAN 4 programming language.

The objective was to develop a digital computer procedure for preliminary analysis of the economic justification of reservoir detention storage for flood control and to present a sample study illustrating its application. A computer program called the University of Kentucky Flood Control Planning Program III was developed and tested on the flood plain of the South Fork of the Licking River in northeastern Kentucky. Given a specified reservoir site and a downstream flood plain divided into planning units, Program III selects the economically efficient combination of reservoir detention storage and the associated combination of channel improvement, flood proofing, land-use management, and residual flooding for each downstream planning unit.

PB-241 756/6GA PC$4.25/MF$2.25
Enviroplan, Inc., Rutherford, N.J.
Maximum SO2 Concentrations Produced by a 1000 Megawatt Power Plant.
Final rept.
Apr 75, 75p EPA/230/1-75-002
Contract EPA-68-01-2837

Descriptors: *Sulfur dioxide, *Electric power plants, *Air pollution, Coal, Predictions, Concentration(Composition), Scrubbers, Cost estimates.
Identifiers: Air pollution control, Low sulfur coal.

The objective of the study was to predict the largest annual average sulfur dioxide (SO2) concentrations, maximum 24-hour SO2 concentrations, and maximum 3-hour SO2 concentrations produced per year by a new modern 1000 megawatt electric power plant that complies with the federal New Source Performance Standards for SO2 emissions from coal-fired power plants. The prediction evidence from this study is intended for use in final decisions by the U.S. Environmental Protection Agency concerning federal standards to be promulgated on the subject of nondegradation of air quality. A total of three plant alternatives for complying with new source standards were examined: the use of a scrubber, the use of a scrubber with reheat of emissions, and the use of low sulfur coal.

PB-241 768/1GA PC$7.50/MF$2.25
Aerospace Corp., El Segundo, Calif.
A Review of Control Strategies for In-Use Vehicles.
Final rept.,
J. Meltzer, M. G. Hinton, T. Iura, A. Burke, and L. Forrest. Dec 74, 236p ATR-74(7328)-1
EPA/460/3-74-021
Contract EPA-68-01-0417

Descriptors: *Air pollution, *Automobiles, Gases, Fuels, Cost estimates, Reviews, Air pollution control equipment, Cost effectiveness, Maintenance.
Identifiers: *Air pollution control, *Air pollution abatement, Automobile exhaust, Retrofit devices, Motor vehicle inspection.

A review was conducted of studies and evaluations made by the EPA and various State agencies of the technical feasibility, emission reduction effectiveness, and costs associated with implementing various approaches for reducing the emission of air pollutants from automobiles currently in use. These approaches include: inspection/maintenance programs, retrofit programs, and the conversion of in-use vehicles to permit the use of gaseous fuels. The emphasis of this report is on providing emission reduction and cost data that may be useful to the States in evaluating the alternative approaches to in-use vehicle emission control, as those approaches may be applied to their particular air quality requirements. This report is supplementary to previous EPA publications covering these same topical areas.

PB-241 787/1GA PC$6.25/MF$2.25
Federal Highway Administration, Washington, D.C.
Special Area Analysis.
Final manual rept.
Aug 73, 173p
Includes Errata sheet dated Aug 73.

Descriptors: *Transportation planning, *Environmental issues, *Social effect, Urban transportation, Air pollution, Noise pollution, Displacement, Criteria, Management methods, Reporting methods, Computer programs, Manuals, Analyzing.
Identifiers: Accessibility, Air quality maintenance, Displaced groups, DOT/2B, DOT/1A.

The report encourages the consideration of social and environmental factors in planning urban transportation systems, discussing the analytical tools for addressing some of the issues involved. These issues include accessibility, air quality, noise, and dislocation impacts. Tools include criteria, methodology guidelines, reporting methods, and use of computer assistance in the planning.

PB-241 794/7GA PC$6.25/MF$2.25
Texas Transportation Inst., College Station.
An Integrated Pavement Design Processor.
Interim rept. Sep 71-May 74, research,
Danny Y. Lu, Chia Shun Shih, Frank H. Scrivner, and Robert L. Lytton. May 74, 176p* TTI-1-8-69-123-22
Prepared in cooperation with Texas Highway Dept., Austin.

Descriptors: *Pavements, Computer programming, Design, Construction, Systems analysis, Highways, Optimization, Flexible pavements, Concrete pavements, Maintenance, Road tests, Performance, Deflection, Elastic properties, Flow charting.
Identifiers: DOT/4CZ/CA, Integrated pavement design processors, Computer aided design.

An integrated pavement design processor has been developed as a strategic approach to the design and management of construction and rehabilitation of pavements. The modulator processor is a comprehensive decision framework with a capacity to drive different optimization routines at the user's command through interactive queries between the computer and the design engineer. The multi-option arrangements enable the design engineer to consider both rigid and flexible pavement systems simultaneously. The processor can be used for new pavement construction or existing pavement rehabilitation. In addition, three options for flexible pavement design are included

to describe the structural subsystem desired: One based on AASHO structural number, another based on Dynaflect deflection, and the third based on linear elastic theory.

PB-241 796/2GA PC$3.75/MF$2.25
TRW/Environmental Services, Vienna, Va.
Implementation Plan Review for Arizona as Required by the Energy Supply and Environmental Coordination Act.
Final rept.
Dec 74, 49p EPA/450/3-74-072
Contract EPA-68-02-1385

Descriptors: *Air pollution, *State programs, *Arizona, Combustion products, State planning, Regulations, Sources, Revisions, Assessments, Standards, Inventories, Particles, Sulfur dioxide, Nitrogen oxides, Fuels, Electric power plants.
Identifiers: *Air pollution abatement, *Implementation air pollution planning program, Air pollution standards, Air quality maintenance, Stationary sources.

Section 4 of the Energy Supply and Environmental Coordination Act of 1974, (ESECA) requires EPA to review each State Implementation Plan (SIP) to determine if revisions can be made to control regulations for stationary fuel combustion sources without interfering with the attainment and maintenance of the national ambient air quality standards. This document, which is also required by Section IV of ESECA, is EPA's report to the State indicating where regulations might be revised.

PB-241 797/0GA PC$4.75/MF$2.25
TRW/Environmental Services, Vienna, Va.
Implementation Plan Review for Kansas Required by the Energy Supply and Environmental Coordination Act.
Final rept.
Dec 74, 76p EPA/450/3-4-076
Contract EPA-68-02-1385

Descriptors: *Air pollution, *State programs, *Kansas, Combustion products, State planning, Regulations, Sources, Revisions, Assessments, Standards, Inventories, Particles, Sulfur dioxide, Nitrogen oxides, Fuels, Electric power plants.
Identifiers: *Air pollution abatement, *Implementation air pollution planning program, Air pollution standards, Air quality maintenance, Stationary sources.

Section 4 of the Energy Supply and Environmental Coordination Act of 1974, (ESECA) requires EPA to review each State Implementation Plan (SIP) to determine if revisions can be made to control regulations for stationary fuel combustion sources without interfering with the attainment and maintenance of the national ambient air quality standards. This document, which is also required by Section 4 of ESECA, is EPA's report to the State indicating where regulations might be revised.

PB-241 798/8GA PC$8.75/MF$2.25
IBM Federal Systems Div., Gaithersburg, Md.
Comprehensive Data Handling System, Air Quality Data Handling Subsystem (AQDHS-II) Program Documentation and User's Guide.
Final rept.
Jul 74, 277p EPA/450/3-74-045
Contract EPA-68-02-0638

Descriptors: *Air pollution, *Data processing, Information retrieval, Data files, Reporting, Computer programs, Compatibility, COBOL, Environmental quality, Programming manuals.
Identifiers: *Air quality data, Air pollution abatement, AQDHS 2 computer program, *Air Quality Data Handling System.

When dealing with atmospheric pollution, it is necessary to amass, catalog, sort, evaluate, and perform calculations upon large volumes of data. The subject data handling system provides air pollution control agencies with the capability to create and maintain their own air quality data base and to retrieve data and generate reports from that data base. This report contains documentation for the computer programs which comprise AQDHS-II. It is also written as a users guide with each program described, input requirements described, field descriptions, etc. The system has a powerful retrieval capability which allows the user to retrieve virtually any piece of data in his file. The user can automatically generate his quarterly air quality progress report in SAROAD format.

PB-241 799/6GA PC$4.75/MF$2.25
Environmental Protection Agency, Washington, D.C. Office of Program Integration.
Scientific and Technical Assessment Report on Particulate Polycyclic Organic Matter (PPOM).
Final rept.
Mar 75, 97p* EPA/600/6-75-001
Paper copy also available from GPO.

Descriptors: *Particles, *Aromatic polycyclic compounds, *Air pollution, Pyrenes, Sources, Atmospheric composition, Concentration(Composition), Toxicology, Epidemiology, Air pollution control, Reviews.
Identifiers: *Benzopyrenes, Air pollution detection, Air pollution effects(Humans).

This report is a review and evaluation of the current knowledge of particulate polycyclic organic matter in the environment as related to possible deleterious effects on human health and welfare. Sources, distribution, measurement, and control technology are also considered. Results of an extensive literature search are presented. Experiments have shown a number of polycyclic organic compounds to be carcinogenic in animals. Although these same compounds have not been proven to be carcinogenic in humans, evidence strongly suggests that they may contribute to the 'urban factor.' In American males, the urban lung cancer death rate is about twice the rural rate, even after adjustment for differences in smoking habits. Evidence suggests significant differences between specific urban areas across the United States. The bulk of the available data is in terms of Benzo(a)pyrene; so this compound has been used as an index on particulate polycyclic organic matter.

PB-241 800/2GA PC$6.25/MF$2.25
Environmental Protection Agency, Research Triangle Park, N.C. Office of Air Quality Planning and Standards.
Guidelines for Air Quality Maintenance Planning and Analysis. Volume 5. Case Studies in Plan Development.
Final rept.
Jan 75, 154p* EPA/450/4-74-006, OAQPS-1.2-024
See also PB-237 583. Prepared by Research Triangle Inst., Durham, N.C. Contract EPA-68-02-1386, Rept. no. 41U-946-9.

Descriptors: *Regional planning, *Air pollution, Government policies, Predictions, Local government, Air quality, State planning, State government, Project planning, Urban planning.
Identifiers: *Air quality maintenance, Air pollution abatement, Baltimore(Maryland), Denver(Colorado), San Diego(California), St. Louis(Missouri), Emissions inventories.

Trial Air Quality Maintenance Plans for Baltimore, Denver, San Diego, and St. Louis are presented in digest form. In each digest the Air Quality Maintenance Area is described in terms of topographic, economic, and air quality characteristics; bases for intergovernmental cooperation are discussed; baseline air quality and emissions inventory are established; emissions are projected for 1975, 1980, and 1985 and consequent air quality is estimated. Strategies for insuring the attainment/maintenance of air quality during the decade 1975-1985 are proposed. Problems encountered and possible solutions are discussed.

PB-241 801/0GA PC$4.75/MF$2.25
Midwest Research Inst., Kansas City, Mo.
Substitute Chemical Program--Initial Scientific and Minieconomic Review of Bromacil.
Mar 75, 88p* EPA-540/1-75-006
Contract EPA-68-01-2448

Descriptors: *Herbicides, Chemical properties, Uracils, Toxicity, Chemical reactions, Manufacturing, Degradation, Safety, Hazards, Metabolism, Residues, Cost effectiveness, Utilization, Food, Reviews.
Identifiers: *Bromacil, Water pollution effects(Animals), Air pollution effects(Animals).

This report is one of a series of in-depth scientific literature searches which review the safety and efficacy of substitute chemicals registered by EPA as possible replacements for cancelled or suspended pesticides or pesticides in litigation. This report on bromacil, a registered substitute chemical for certain cancelled and suspended uses of 2,4,5-T, covers all uses of bromacil and is intended to be adaptable to future needs. It also, where applicable, identifies areas where technical data may be lacking so that appropriate studies may be initiated to develop desirable information. The review is a compilation and summarization of published and unpublished scientific test and use data from various sources. It discusses manufacture, toxicity, uses and cost effectiveness.

PB-241 810/1GA PC$4.25/MF$2.25
East Tennessee State Univ., Johnson City. Dept. of Health Sciences.
Evaluation of Health Hazards Associated with Solid Waste/Sewage Sludge Mixtures.
Environmental protection technology series (Final),
William L. Gaby. Apr 75, 56p EPA/670/2-75-023
Contract EPA-68-03-0128
Paper copy also available from GPO.

Descriptors: *Sludge disposal, *Public health, *Microorganisms, *Composts, Decontamination, Hazards, Biodeterioration, Concentrating, Dewatering, Bacteria, Indicator species, Evaluation, Recommendations, Parasites.
Identifiers: Microorganism control, *Solid waste disposal, Pathogens.

The report summarizes and evaluates the health hazards associated with municipal solid waste/sewage sludge composting by the windrow composting process. The occurrence and survival of pathogens, parasites, and indicator bacteria at various stages during the composting process are described. The study shows that windrow temperatures of 120F to 167F (49C-74C) maintained for at least seven days destroy pathogens and human parasites. Dog parasitic ova, however, remain intact 35 days after exposure. Considerable variation in the temperature is found at the top and bottom two inches of the windrow indicating that proper turning of the compost is essential to ensure destruction of pathogens and parasites. It is concluded that a properly composted solid waste or solid waste/sewage sludge mixture is microbiologically acceptable as a soil conditioner for gardens, farms, and lawns, or for filling areas of erosion without creating health hazards.

PB-241 814/3GA PC$3.75/MF$2.25
Pacific Northwest Environmental Research Lab., Corvallis, Oreg.

Matfield Impoundment, Plymouth County, Massachusetts, EPA Region I.
Final rept. for 1972.
Apr 75, 41p Working Paper-221
Prepared in cooperation with National Environmental Research Center, Las Vegas, Nev., Massachusetts Water Resources Commission, Boston. Div. of Water Pollution Control, and Massachusetts National Guard, Boston.

Descriptors: *Water pollution, *Matfield Impoundment, Water quality, Inorganic phosphates, Inorganic nitrates, Pollution abatement, Nutrients, Bioassay, Watersheds, Reservoirs, Water quality management, Massachusetts.
Identifiers: Eutrophication, *Water quality data, Plymouth County(Massachusetts).

Annual total phosphorus and total nitrogen loadings to the lake were estimated and subdivided according to either point or non-point source origin. An assessment of the lake's trophic condition and limiting nutrient is also provided. All data collected by the U.S.E.P.A. National Eutrophication Survey during the one year study of the lake and its tributaries are included.

PB-241 819/2GA PC$8.75/MF$2.25
Midwest Research Inst., Kansas City, Mo.
Substitute Chemical Program--Initial Scientific and Minieconomic Review of Parathion.
Jan 75, 283p* EPA-540/1-75-001

Descriptors: *Insecticides, *Parathion, Degradation, Residues, Food, Toxicity, Manufacturing, Cost effectiveness, Chemical reactions, Chemical properties, Phosphorus organic compounds, Chemical analysis, Utilization, Reviews, Safety, Hazards.
Identifiers: Water pollution effects(Animals).

This report is part of a program to review the safety and efficacy of substitute chemicals registered by EPA as possible replacements for cancelled or suspended pesticides or pesticides in litigation. This report on parathion, a pesticide substituting for DDT, reviews the substitute chemical's chemistry and analytical methods, its toxicity to laboratory and domestic animals and to humans, its effects on the environment, and its use patterns, costs and economic efficacy. The review is a compilation and summarization rather than an interpretation of published and unpublished scientific test and use data from various sources.

PB-241 823/4GA PC$5.25/MF$2.25
Federal Highway Administration, Washington, D.C.
Carpool Incentives and Opportunities. Report of the United States Congress Pursuant to Section 3(e) Public Law 93-239. Emergency Highway Energy Conservation Act.
Feb 75, 104p* FH-11-8325

Descriptors: *Urban transportation, *Passenger transportation, *Coordination, Projects, Incentives, Promotion, Energy conservation, Gasoline, Fuel consumption, Public relations, Consumer education.
Identifiers: *Car pools.

The report includes (1) a description of methods and programs used to promote carpooling, (2) a discussion of the success of these methods, (3) an evaluation of a broad range of incentives to promote carpooling, and (4) recommendations on government actions to encourage carpooling. The report recommended that the Federal Government broaden its efforts to encourage carpooling to set an example as a major employer. The report also recommends that State and local governments expand efforts to encourage carpooling through (1) the development of highway projects providing preferential treatment for carpools, and (2) assistance to employers in promoting carpooling among their employees.

PB-241 824/2GA PC$6.25/MF$2.25
Voorhees (Alan M.) and Associates, Inc., McLean, Va.
Development of a Trial Air Quality Maintenance Plan for the St. Louis AQMSA.
Final rept.
Dec 74, 171p EPA/450/3-74-052
Contract EPA-68-02-1388
See also PB-237 416.

Descriptors: *Air pollution, *Regional planning, Missouri, Illinois, Management guidelines, Program review, Inventories, Sulfur oxides, Particulate emissions, Carbon monoxide, Intergovernmental relationships, Evaluation.
Identifiers: *Air pollution abatement, *Air quality maintenance, *Saint Louis(Missouri), Photochemical oxidants.

This report documents the development of a trial air quality maintenance plan for the St. Louis Air Quality Maintenance Study Area. This is one of four such trial plans prepared as part of the development and testing of EPA Guidelines for air quality maintenance planning. The four areas include St. Louis, San Diego, Denver, and Baltimore. The study area in this report includes the city of St. Louis and the seven counties in Missouri and Illinois which comprise the St. Louis SMSA. The preparation of this trial plan included the review of existing state implementation plans, emission inventory analysis and projection, air quality analysis and projection, and the formulation of attainment/maintenance strategies for control of particulates, sulfur dioxide, carbon monoxide, and photochemical oxidants.

PB-241 840/8GA PC$7.00/MF$2.25
Midwest Research Inst., Kansas City, Mo.
Substitute Chemical Program--Initial Scientific and Minieconomic Review of Methyl Parathion.
Feb 75, 187p* EPA/540/1-75-004
Contract EPA-68-01-2448

Descriptors: *Insecticides, Food, Residues, Manufacturing, Toxicity, Chemical reactions, Chemical properties, Degradation, Hazards, Chemical analysis, Phosphorus organic compounds, Utilization, Cost effectiveness, Reviews, Safety.
Identifiers: *Methyl parathion, Water pollution effects(Animals), Phosphorothioates.

This report contains a scientific and minieconomic review of methyl parathion ((0,0)-dimethyl O-p-nitrophenyl phosphorothioate). Methyl parathion was identified as a registered substitute chemical for certain cancelled and suspended uses of DDT. The substitute chemical is reviewed for suitability considering all applicable scientific factors such as: chemistry, toxicology, pharmacology and environmental fate and movement; and socio-economic factors such as: use patterns and costs and benefits. The review covers all uses of methyl parathion and is intended to be adaptable to future needs.

PB-241 869/7GA PC$5.75/MF$2.25
Maryland Univ., College Park. Dept. of Civil Engineering.
Research on Route Diversion Parameters.
Final rept.,
Jerome William Hall. Dec 74, 134p
Prepared in cooperation with Maryland State Highway Administration, Brooklandville. Bureau of Research.

Descriptors: *Vehicular traffic control, *Diverting, *Urban transportation, Routes, Traffic flow, Travel patterns, Questionnaires, Traffic congestion, Traffic signs, Maryland, District of Columbia.
Identifiers: Baltimore(Maryland), DOT/5L, DOT/2B.

The study seeks to determine the feasibility of the real-time diversion of traffic in an intercity corridor. Using the 30 mile corridor between Baltimore, MD and Washington, D.C. as a study area, efforts focused on highway operation, incident detection, diversion policy and communication techniques. Because of the general lack of information of diversion signing techniques, a questionnaire study of 6600 motorists using the corridor was undertaken. Motorists preferred signs presenting information on the length of congestion, congestion cause with exit instructions or the availability of suitable alternate routes. It is felt that if the growth in the Baltimore-Washington corridor traffic continues, a real-time diversion program would be warranted in about ten years.

PB-241 870/5GA PC$10.00/MF$2.25
TRW Transportation and Environmental Operations, Houston, Tex.
Urban Traffic Control System and Bus Priority System (UTCS/BPS): Traffic Adaptive Network Signal Timing Program (TANSTP). Software Description.
Final rept.,
R. Kessemann, L. Bolling, D. L. Cooper, J. Ritter, and E. Bravo. Aug 73, 351p* 96004.007
Contract DOT-FH-11-7594

Descriptors: *Vehicular traffic control, *Urban transportation, *Traffic signals, *Computer programming, Traffic flow, Automatic control, Adaptive systems, Optimization, FORTRAN, Real time operations, Central processing units, Executive routines.
Identifiers: On line systems, TRANSTP computer program, DOT/5L, DOT/3C.

The document describes the Traffic Adaptive Network Signal Timing Program (TANSTP) of the Urban Traffic Control System/Bus Priority System. The TANSTP software package uses the executive structure, the surveillance data, and the command software of the first generation package, which was installed in the original UTCS System. (The first generation uses a pre-stored timing pattern). TANSTP is a second generation on-line optimization of signal timing patterns using real-time predictions of volume patterns and on-line subnetwork determination. This document contains an overview of the entire UTCS/TANSTP software system; provides a description of the software routines; includes a description of the subroutines which were constructed to interface the second generation software with the first generation data base; gives a description of the modifications made to the first generation routines to support the second generation package; discusses the procedures to be used in operating the UTCS/TANSTP System; and describes the data base. The Appendix contains a description of two off-line programs used to support the prediction.

PB-241 875/4GA PC$10.50/MF$2.25
North Carolina Univ., Chapel Hill. Dept. of Environmental Sciences and Engineering.
The World's Air Quality Management Standards. Volume I. The Air Quality Management Standards of the World, Including United States Federal Standards.
Final rept.,
Werner Martin, and Arthur C. Stern. Oct 74, 411p* EPA/650/9-75-001-a
Contract EPA-68-02-0556
Paper copy also available in set of 2 reports as PB-241 874-SET, PC$20.00.

Descriptors: *Air pollution, Concentration(Composition), Particles, Emergency preparedness, Standards, Exhaust emissions, Classifications, Combustion products, Particles, Inventories, Visibility, United States,

Discharge, Rates(Per time), Statistical data, Recommendations.
Identifiers: *Air pollution standards, Stationary sources, *Foreign countries.

This is as complete as possible an assembly of the numerical air quality management standards of the world. The kinds of standards included are those for: air quality, concentration at point of impingement at ground level, deposited particulate matter, emergency procedure concentrations, emissions, fluorides in forage, fuel, measurement method, protection zone, soiling index, stack height and sulfation. It excludes regulations without numerical limits; and, conversely, numerical limits that do not directly relate to management. In the former category are open burning and fugitive dust regulations. In the latter category are numerical design standards for fuel burning equipment which relate only indirectly to air quality management. Volume 1 includes world and U.S. Federal Standards. Data are presented in tabular form, supported, where necessary, with figures.

PB-241 876/2GA PC$10.25/MF$2.25
North Carolina Univ., Chapel Hill. Dept. of Environmental Sciences and Engineering.
The World's Air Quality Management Standards. Volume II. The Air Quality Management Standards of the United States.
Final rept.,
Werner Martin, and Arthur C. Stern. Oct 74, 390p* EPA/650/9-75-001-b
Contract EPA-68-02-0556
Paper copy also available in set of 2 reports as PB-241 874-SET, PC$20.00.

Descriptors: *United States, *Air pollution, Standards, Recommendations, Inventories, Classifications, Statistical data, Particles, Exhaust emissions, Combustion products, Emergency preparedness, Visibility, Chimneys, Statewide statistics, Municipalities, Counties.
Identifiers: *Air pollution standards, Stationary sources.

Volume 2 of a two volume report on numerical standards of the world for air pollution regulation presents data for the United States covering gaseous and particulate emissions, measurement methods, stack heights, concentration at points of impingement, and emergency procedure concentrations.

PB-241 913/3GA PC$5.75/MF$2.25
Washington Univ., Seattle. Dept. of Civil Engineering.
The Water Quality and Tidal Flushing Characteristics of Three Small Boat Basins; Des Moines Marina, Edmonds Harbor, and Newport Shores.
Master's thesis,
Charles Ryan Knoll. 1974, 131p W75-07726, OWRT-A-064-WASH(1)
Contract DI-14-31-0001-4048

Descriptors: *Water quality, *Marinas, *Harbors, Tidal currents, Circulation, Tidewater, Sampling, Dissolved gases, Oxygen, Theses, Temperature, Phytoplankton, Hydraulic models, Washington(State).
Identifiers: Des Moines Marina, Edmonds Harbor, Newport Shores, *Tidal flushing.

Tide induced circulation patterns and gross flushing characteristics of Des Moines Marina, Edmonds Harbor, and Newport Shores are compared with field observations of currents and water quality within the marinas. As a general rule, no gross pollution problems within boat basins were noticeable. In considering water quality versus relative stagnation of harbor waters, water quality seemed to be related to circulation characteristics. The greater the circulation, the less difference in water qualities between the waters inside and outside of the boat basin. The fresh water site, Newport Shores, seems to have more of a potential eutrophication problem than the marine sites of Des Moines Marina and Edmonds Harbor. A sampling procedure is suggested for obtaining standardized description of the quality of water within a marina as compared to the quality of ambient waters.

PB-241 918/2GA PC$8.50/MF$2.25
Aerospace Corp., El Segundo, Calif. Urban Programs Div.
Analysis of Test Data for NOx Control in Gas- and Oil-Fired Utility Boilers.
Final rept. 1 May 73-31 Aug 74,
Owen W. Dykema. Jan 75, 260p* ATR-75(7487)-1 EPA/650/2-75-012
Grant EPA-R-802366

Descriptors: *Combustion, *Boilers, *Nitrogen oxides, Air pollution, Fuel oil, Natural gas, Flue gases, Burners, Electric power generators, Heat transfer, Correlation, Numerical analysis, Data processing, Computer programs, Tests, Carbon monoxide, Carbon dioxide, Oxygen.
Identifiers: *Air pollution control, *Combustion modification.

The report describes analyses of a large number of emissions, operating conditions, and boiler configuration data from full-scale, multiple-burner electric utility boilers using natural gas and low-sulfur oil fuels. The report includes: (1) a discussion of the major combustion process modications resulting in NOx emission reductions due to two-stage combustion, burners out-of-service, combustion air temperature reduction, load reduction, and excess air variations; (2) estimates of NOx minima achievable in the boilers studied with current hardware; (3) estimates of most probable longer term hardware and operating condition modifications likely to yield ultimate NOx reductions with these fuels; (4) identification and verification of general mechanisms for the combustion and flame instabilities observed; and (5) a list of all of the hardware configurations, operating conditions, and NOx, CO, O2, and CO2 emissions data for 428 tests in eight full-scale, multiple-burner, face-fired electric utility boilers using natural gas and low-sulfur oil fuels.

PB-241 923/2GA PC$4.25/MF$2.25
Environmental Protection Agency, New York. Data Systems Branch.
SNSIM1/2. A Computer Program for the Steady-State Water Quality Simulation of a Stream Network.
Final rept.,
Robert E. Braster, Steven C. Chapra, and George A. Nossa. Feb 75, 56p*

Descriptors: *Water quality, *Rivers, *Stream flow, Mathematical models, Computer programs, Steady state, Dissolved gases, Oxygen, Biochemical oxygen demand, Stream pollution.
Identifiers: SNSIM computer program, Dissolved oxygen, FORTRAN 4 programming language.

The report describes a computer program which can be used to model water quality parameters for a steady state, one dimensional stream network. The techniques used in this program are based on an expanded form of the Streeter-Phelps equation.

PB-241 924/0GA PC$3.25/MF$2.25
California Univ., Los Angeles. Dept. of Engineering Systems.
System Identification and Multi-Level Optimization of Integrated Ground Water Systems.
Completion rept.,
John A. Dracup. Feb 74, 6p W75-07722, OWRT-A-033-CAL(4)

Descriptors: *Ground water, *Surface waters, *Water consumption, Mathematical models, Optimization, Aquifers, Predictions.
Identifiers: *Conjunctive use, Water utilization.

Conjunctive surface water and ground water systems are analyzed using the techniques of system identification and multi-level optimization. Mathematical models describing the behavior of the ground water regime are developed. Given historic ground water levels and aquifer parameters, transfer functions of the model are determined. Given any input, future responses of the system are predicted. Aquifer characteristics are determined for each subsystem in the first-level optimization. A general model for optimal development and operation of an integrated ground water basin is developed in the second-level optimization.

PB-241 930/7GA PC$4.25/MF$2.25
TRW/Environmental Services, Redondo Beach, Calif.
Implementation Plan Review for Arkansas as Required by the Energy Supply and Environmental Coordination Act.
Apr 75, 70p EPA/450/3-75-010
Contract EPA-68-02-1385

Descriptors: *Air pollution, *State programs, *Arkansas, Combustion products, State planning, Regulations, Sources, Revisions, Assessments, Standards, Inventories, Particles, Sulfur dioxide, Fuels, Electric power plants.
Identifiers: *Air pollution abatement, *Implementation air pollution planning program, Air pollution standards, Air quality maintenance, Stationary sources.

Section 4 of the Energy Supply and Environmental Coordination Act of 1974, (ESECA) requires EPA to review each State Implementation Plan (SIP) to determine if revisions can be made to control regulations for stationary fuel combustion sources without interfering with the attainment and maintenance of the national ambient air quality standards. This document, which is also required by Section 4 of ESECA, is EPA's report to the State indicating where regulations might be revised.

PB-241 931/5GA PC$4.75/MF$2.25
TRW/Environmental Services, Redondo Beach, Calif.
Implementation Plan Review for Texas as Required by the Energy Supply and Environmental Coordination Act.
Apr 75, 85p EPA/450/3-75-025
Contract EPA-68-02-1385

Descriptors: *Air pollution, *State programs, *Texas, Combustion products, State planning, Regulations, Sources, Revisions, Assessments, Standards, Inventories, Particles, Sulfur dioxide, Fuels, Electric power plants.
Identifiers: *Air pollution abatement, *Implementation air pollution planning program, Air pollution standards, Air quality maintenance, Stationary sources.

Section 4 of the Energy Supply and Environmental Coordination Act of 1974, (ESECA) requires EPA to review each State Implementation Plan (SIP) to determine if revisions can be made to control regulations for stationary fuel combustion sources without interfering with the attainment and maintenance of the national ambient air quality standards. This document, which is also required by Section 4 of ESECA, is EPA's report to the State indicating where regulations might be revised.

PB-241 932/3GA PC$3.25/MF$2.25
Environmental Protection Agency, Research Triangle Park, N.C. Office of Air Quality Planning and Standards.

Implementation Plan Review for South Carolina as Required by the Energy Supply and Environmental Coordination Act.
Mar 75, 21p EPA/450/3-75-031
Prepared in cooperation with Argonne National Lab., Ill.

Descriptors: *Air pollution, *State programs, *South Carolina, Combustion products, State planning, Regulations, Sources, Revisions, Assessments, Standards, Inventories, Particles, Sulfur dioxide, Nitrogen oxides, Fuels, Electric power plants.
Identifiers: *Air pollution abatement, *Implementation air pollution planning program, Air pollution standards, Air quality maintenance, Stationary sources.

Section 4 of the Energy Supply and Environmental Coordination Act of 1974, (ESECA) requires EPA to review each State Implementation Plan (SIP) to determine if revisions can be made to control regulations for stationary fuel combustion sources without interfering with the attainment and maintenance of the national ambient air quality standards. This document, which is also required by Section 4 of ESECA, is EPA's report to the State indicating where regulations might be revised.

PB-241 933/1GA PC$3.25/MF$2.25
Environmental Protection Agency, Research Triangle Park, N.C. Office of Air Quality Planning and Standards.
Implementation Plan Review for Alabama as Required by the Energy Supply and Environmental Coordination Act.
Apr 75, 23p EPA/450/3-75-043
Prepared in cooperation with Argonne National Lab., Ill.

Descriptors: *Air pollution, *State programs, *Alabama, Combustion products, State planning, Regulations, Sources, Revisions, Assessments, Standards, Inventories, Particles, Sulfur dioxide, Nitrogen oxides, Fuels, Electric power plants.
Identifiers: *Air pollution abatement, *Implementation air pollution planning program, Air pollution standards, Air quality maintenance, Stationary sources.

Section 4 of the Energy Supply and Environmental Coordination Act of 1974, (ESECA) requires EPA to review each State Implementation Plan (SIP) to determine if revisions can be made to control regulations for stationary fuel combustion sources without interfering with the attainment and maintenance of the national ambient air quality standards. This document, which is also required by Section 4 of ESECA, is EPA's report to the State indicating where regulations might be revised.

PB-241 934/9GA PC$4.25/MF$2.25
TRW/Environmental Services, Vienna, Va.
Implementation Plan Review for New York as Required by the Energy Supply and Environmental Coordination Act.
Apr 75, 55p EPA/450/3-75-044
Contract EPA-68-02-1385

Descriptors: *Air pollution, *State programs, *New York, Combustion products, State planning, Regulations, Sources, Revisions, Assessments, Standards, Inventories, Particles, Sulfur dioxide, Fuels, Electric power plants.
Identifiers: *Air pollution abatement, *Implementation air pollution planning program, Air pollution standards, Air quality maintenance, Stationary sources.

Section 4 of the Energy Supply and Environmental Coordination Act of 1974, (ESECA) requires EPA to review each State Implementation Plan (SIP) to determine if revisions can be made to control regulations for stationary fuel combustion sources without interfering with the attainment and maintenance of the national ambient air quality standards. This document, which is also required by Section 4 of ESECA, is EPA's report to the State indicating where regulations might be revised.

PB-241 935/6GA PC$3.25/MF$2.25
TRW/Environmental Services, Redondo Beach, Calif.
Implementation Plan Review for California as Required by the Energy Supply and Environmental Coordination Act.
Apr 75, 8p EPA/450/3-75-045
Contract EPA-68-02-1385

Descriptors: *Air pollution, *State programs, *California, Combustion products, State planning, Regulations, Sources, Revisions, Assessments, Standards, Inventories, Particles, Nitrogen oxides, Sulfur dioxide, Fuels, Electric power plants.
Identifiers: *Air pollution abatement, *Implementation air pollution planning program, Air pollution standards, Air quality maintenance, Stationary sources.

Section 4 of the Energy Supply and Environmental Coordination Act of 1974, (ESECA) requires EPA to review each State Implementation Plan (SIP) to determine if revisions can be made to control regulations for stationary fuel combustion sources without interfering with the attainment and maintenance of the national ambient air quality standards. This document, which is also required by Section 4 of ESECA, is EPA's report of the State indicating where regulations might be revised.

PB-241 940/6GA PC$4.25/MF$2.25
Washington State Water Research Center, Pullman.
Model Development and Systems Analysis of the Yakima River Basin: Water Quality Modeling.
Final completion rept.,
Will B. Betchart. Nov 74, 56p 17D W75-07995, OWRT-B-036-WASH(6)
Contracts DI-14-31-0001-3348, DI-14-31-0001-3663

Descriptors: *Water quality, *Yakima River Basin, Mathematical models, Water flow, Systems analysis, Dissolved gases, Oxygen, Temperature, Washington(State).
Identifiers: Dissolved oxygen.

A study of water quality modeling as a planning tool has been conducted with specific reference to the Yakima River in central Washington. Four different water quality models have been developed for use in planning of the Yakima Water Quality. Each model permits progressively more parameters to describe river water quality. These models indicate relative rather than absolute response of water quality to various action unless the extensive input data requirements can be satisfied. Each of the four models is applied to the Yakima in the problem definition mode and their strengths and weaknesses in this use are assessed.

PB-241 946/3GA PC$5.25/MF$2.25
Colorado State Univ., Fort Collins. Environmental Resources Center.
Economic and Institutional Analysis of Colorado Water Quality Management.
Completion rept.,
Robert A. Young, G. E. Radosevich, S. L. Gray, and Kenneth L. Leathers. Mar 75, 114p
Completion-61 W75-07992, OWRT-B-042-COLO(3)
Contract DI-14-01-0001-3065

Descriptors: *Water quality management, *Economic impacts, *Colorado, Water pollution, Institutional implications, Legislation, Irrigation, Salt water, Cost estimates, Regional planning, Forecasting, Grand Valley.
Identifiers: Return flow.

Waste products of production and consumption activities are often discharged into the nation's watercourse. The objective of the study was to develop information on economic and institutional aspects of water quality mangement in Colorado. An economic conceptualization of the water quality management problem is presented. The legal and institutional settings within which the present water pollution control program operates is reviewed and described. Two economic case studies are presented. One provides estimates of the economic value of water for waste dilution and the other examines economic impacts of programs for control of saline irrigation return flows in western Colorado.

PB-241 977/8GA PC$8.50/MF$2.25
American Water Works Association Research Foundation, New York.
Desalting Techniques for Water Supply Quality Improvement.
Research and development progress rept.,
Sidney A. Bresler, Harry A. Faber, Graham Walton, and Elroy F. Spitzer. Jun 74, 271p* Int-OSW-RDPR-75-1002
Contract DI-14-30-2864

Descriptors: *Desalting, *Water treatment, *Water supply, Capitalized costs, Ion exchanging, Cost estimates, Brackish water, Distillation, Operating costs.
Identifiers: *Reverse osmosis desalination, Electrodialysis desalination.

It is anticipated that municipal water consumption will continue to grow, and that consumers increasingly will demand improvements in water quality. Desalting techniques of electrodialysis, reverse osmosis and ion exchange are being used in a number of communities. These processes will not only improve the quality of a brackish water supply by removing dissolved solids, but also will remove some of the undesired minor elements which may be present in the intake water. The quality of water which is made available to the consumer can be improved by changing the municipal water supply--either by obtaining the water from a better source or by building a desalting or other water treatment plant. Information is presented which describes methods of improving the quality of brackish water supplies and which will permit preliminary estimates to be made of the tangible benefits of water quality improvement and of the capital and operating costs of conventional and desalting treatment plants. Local conditions will determine which alternative is best for each community.

PB-241 981/0GA PC$4.75/MF$2.25
Wisconsin Univ., Madison. Water Resources Center.
The Literature Cited in the Wisconsin Department of Natural Resources Publications on Water Related Subjects, 1964-1973,
Richard D. Walker, and Gregory J. Zuck. Apr 75, 98p WIS-WRC-75-03 W75-07996, OWRT-B-083-WIS(1)
Contract DI-14-31-0001-4183

Descriptors: *Water supply, *Water quality, Technical reports, Documents, Wisconsin, Information retrieval.
Identifiers: Information dissemination.

The study is part of a more comprehensive research study to examine the transfer of information in the area of water resources. It deals with the use of literature cited in the Wisconsin Department of Natural Resources publications on topics of water resources, such as, water quality and quantity, water supply, water cycle, planning, and other water subjects. Citations to

the literature in all water related publications issued during the period, 1964-73, are analyzed by subject, age, form, and publisher of cited material.

PB-241 982/8GA PC$9.50/MF$2.25
Meteorology Research, Inc., Altadena, Calif.
Three-Dimensional Pollutant Gradient Study: 1972-1973 Program.
Final rept. Feb 72-Jun 74,
D. L. Blumenthal, T. B. Smith, W. H. White, S. L. Marsh, and D. S. Ensor. Nov 74, 349p MRI-74-FR-1262 ARB-R-631/2-1245-74-33
Contracts ARB-631, ARB-2-1245

Descriptors: *Air pollution, *Atmospheric composition, *Smog, Meteorological data, Aerosols, Nitrogen oxides, Concentration(Composition), Nitrogen dioxide, Ozone, Hydrocarbons, Carbon monoxides, Particle size distribution, Condensation nuclei, Exhaust gases, Turbulence, California, San Francisco Bay, San Joaquin Valley.
Identifiers: *Air quality data, Los Angeles(California).

Data on the 3-Dimensional distribution and transport of aerosols and gaseous pollutants in the South Coast (Los Angeles), San Joaquin Valley, and San Francisco Bay Air Basins were obtained and analyzed. Sampling flights were made in conjunction with ground level sampling. Meteorological data were obtained along with bscat, condensation nuclei, O3, NOx, CO, turbulence, temperature, and humidity data. Mixing layer structure and ventilation processes in the South Coast Basin, are shown along with episode conditions. Air pollution in this and other Air Basins is shown to be a regional problem where pollutants accumulate in a stagnant air mass and subsequently move downwind. The data demonstrate changes in the aerosol and gaseous pollutants as they age and indicate certain factors contributing to aerosol formation and growth. The structure of a few point source plumes was determined and showed the possible buoyant effect of roadways. The overnight stability of ozone at high concentrations in aged polluted air is documented.

PB-241 984/4GA PC$7.50/MF$2.25
Brigham Young Univ., Provo, Utah.
Water Quality Effect of Diking a Shallow Arid-Region Lake.
Final rept. 1 Jun 70-30 Jun 74,
Dean K. Fuhriman, LaVerne B. Merritt, Jerald S. Bradshaw, and James R. Barton. Apr 75, 243p EPA/660/2-75-007
Contract EPA-R-801400

Descriptors: *Water quality, *Dikes, *Utah Lake, Arid land, Evaporation, Seepage, Measurement, Sodium chloride, Potassium, Utah, Sulfates, Ions, Water management, Mathematical models, Flow rate, Computer programs.
Identifiers: Dissolved solids.

The inflow, outflow, and in-lake water quality and quantity of Utah Lake in Central Utah was studied over a 36-month period. The work was undertaken to determine the effect of a proposed diking project on the quality and quantity of lake water and to develope methodology for determining the effect of diking or other management practices on the quality of water in any lake system. A Computer simulation model was developed which is able to analyze the effect of a given management program on the water quality of the lake, particularly as related to the 'conservative salts' present. The simulation model was also used to evaluate the evaporation from the lake by use of a salt balance technique. Results of the research indicated that the diking of Utah Lake will have a positive beneficial effect upon the water quality of the lake and will also result in considerable saving of water and reclamation of valuable land.

PB-241 999/2GA PC$9.50/MF$2.25
Battelle Columbus Labs., Ohio.
Identification and Assessment of Asbestos Emissions from Incidental Sources of Asbestos.
Final rept. Dec 73-May 74,
R. J. Kuryvial, R. A. Wood, and R. E. Barrett. Sep 74, 344p* EPA/650/2-74-087
Contract EPA-68-02-0230

Descriptors: *Air pollution, *Mining engineering, *Asbestos deposits, Ores(Metal sources), Nonmetalliferous minerals, Geological surveys, Identifying, Predictions, Site surveys, Asbestos, Sources.
Identifiers: Accessory minerals, Air pollution potential.

The report describes work directed at defining the potential seriousness of asbestos emissions that result from man's disturbing geological formations in which asbestos occurs as an accessory mineral. An extensive literature search yielded a catalog of all known and probable occurrences of asbestos in the United States. These locations were screened to identify large mining activities which could cause release of asbestos to the atmosphere. Sixteen such sites were identified. Emissions were estimated for these sites, based on production figures and the nature of the operations. Two sites were selected from this group for further characterization based on probable emissions and population density considerations. Ambient air samples were taken at the two sites, using high volume samplers; the samples were analyzed, using electron microscope techniques. The findings are discussed.

PB-242 001/6GA PC$3.75/MF$2.25
American Public Works Association, Chicago, Ill.
Physical and Settling Characteristics of Particulates in Storm and Sanitary Wastewaters.
Final rept.,
Robert J. Dalrymple, Stephen L. Hodd, and David C. Morin. Apr 75, 41p EPA/670/2-75-011
Contract EPA-68-03-0272

Descriptors: *Combined sewers, *Overflows, *Particles, *Settling, Solids, Waste water, Sewage treatment, Separation, Runoff, Swirling, Concentrators, Particle size, Hydraulic models, Design, Efficiency, Simulation.
Identifiers: Storm water runoff.

An investigation was conducted, as part of model studies utilizing a swirl concentrator as a primary separator, helical combined sewer overflow regulator, and related studies, to characterize the properties of solids in sanitary sewage, combined sewer overflows, and stormwater runoff. To effectuate this study, material suitable for monitoring removal efficiencies in hydraulic models of the swirl concentrator unit has been developed. The approach taken in the simulation sewage studies, was to match as closely as possible the settling characteristics of solids in three types of sewage and/or urban runoff with a well-defined, uniform artificial test material. Importantly, as background information for the selection of synthesized solids, the settling characteristics (including size and specific gravity distribution) of sanitary sewage, combined sewer overflow and stormwater were determined. These values will be useful for future determinations of physical treatment process design and associated treatability.

PB-242 011/5GA PC$4.75/MF$2.25
Llewelyn-Davis Associates, New York.
A Housing Site Planning Evaluation Guide and Methodology.
Final rept.
May 74, 92p*
Contract HUD-H-1696

Descriptors: *Housing planning, *Site selection, Evaluation, Housing characteristics, Land use, Transportation, Housing market, Weighting functions, Real variables, Family characteristics, Community facilities.

The report is a technical and educational tool for the evaluation of multi-family site planning and design solutions. It is in two parts. Part A - 'A Site Planning Evaluation Methodology' and Part B -'A Housing Site Plan Evaluation Guide'. The methodology documents a computer based mathematical site planning evaluation tool based on empirical data. The guide provides data on universally applicable objective and subjective criteria that must be considered when evaluating the acceptability of a site and housing site plan.

PB-242 017/2GA PC$3.25/MF$2.25
Environmental Protection Agency, Research Triangle Park, N.C. Office of Air Quality Planning and Standards.
Implementation Plan Review for Georgia as Required by the Energy Supply and Environmental Coordination Act.
Apr 75, 24p EPA/450/3-75-042
Prepared in cooperation with Argonne National Lab., Ill.

Descriptors: *Air pollution, *State programs, *Georgia, Combustion products, State planning, Regulations, Sources, Revisions, Assessments, Standards, Inventories, Particles, Sulfur dioxide, Fuels, Electric power plants.
Identifiers: *Air pollution abatement, *Implementation air pollution planning program, Air pollution standards, Air quality maintenance, Stationary sources.

Section 4 of the Energy Supply and Environmental Coordination Act of 1974, (ESECA) requires EPA to review each State Implementation Plan (SIP) to determine if revisions can be made to control regulations for stationary fuel combustion sources without interfering with the attainment and maintenance of the national ambient air quality standards. This document, which is also required by Section 4 of ESECA, is EPA's report to the State indicating where regulations might be revised.

PB-242 022/2GA PC$3.25/MF$2.25
Environmental Protection Agency, Research Triangle Park, N.C. Office of Air Quality Planning and Standards.
Implementation Plan Review for Tennessee as Required by the Energy Supply and Environmental Coordination Act.
Apr 75, 23p EPA/450/3-75-041
Prepared in cooperation with Argonne National Lab., Ill.

Descriptors: *Air pollution, *State programs, *Tennessee, Combustion products, State planning, Regulations, Sources, Revisions, Assessments, Standards, Inventories, Particles, Sulfur dioxide, Fuels, Electric power plants.
Identifiers: *Air pollution abatement, *Implementation air pollution planning program, Air pollution standards, Air quality maintenance, Stationary sources.

Section 4 of the Energy Supply and Environmental Coordination Act of 1974, (ESECA) requires EPA to review each State Implementation Plan (SIP) to determine if revisions can be made to control regulations for stationary fuel combustion sources without interfering with the attainment and maintenance of the national ambient air quality standards. This document, which is also required by Section 4 of the ESECA, is EPA's report to the State indicating where regulations might be revised.

PB-242 037/0GA PC$4.25/MF$2.25
Dayton, Ohio. USAC IMIS Project.

City of Dayton Public Finance Municipal Information Subsystem. Input/Output Manual (Task 7). Treasury Management Component.
Completion rept.
Feb 75, 57p* USAC-DOH5-7012
Contract HUD-H-1215

Descriptors: *Local government, *Urban information systems, *Financial management, Public administration, Ohio, Manuals, Input output models, Specialized training, Orientation(Training), Computer technology.
Identifiers: USAC project, *Dayton(Ohio), Integrated municipal information systems, Treasury management.

This report is from a USAC series produced by the city of Dayton, Ohio, covering activities from systems analysis through implementation and evaluation of urban information systems. Part of the series which contains training and orientation for ten components of an integrated public finance information system, this volume contains the Input/Output Manual for the Treasury Management Component.

PB-242 039/6GA PC$4.25/MF$2.25
Charlotte, N.C. USAC Project.
The IMIS Traffic Control Device Inventory Users Manual.
Apr 75, 72p* USAC-CNCO-0178, MIS-7601/001/01
Contract HUD-H-1216

Descriptors: *Local government, *Urban information system, *Traffic control, North Carolina, Manuals, Management information systems, Utilization, Supervisors, Data acquisition, Computer technology, Operators(Personnel), Equipment.
Identifiers: *Charlotte(North Carolina), USAC project, Integrated municipal information systems.

The report is from a USAC series produced by the city of Charlotte, covering activities from systems analysis through implementation and evaluation of urban information systems. The IMIS-Traffic Control Device Inventory Users Manual is intended to be the principal self-instruction material available for use by (1) the management and supervisory personnel who will review and control the data which is collected for and generated by the system, (2) the operations personnel who will actually record the data used by the system; and (3) those department personnel who will directly interact with the system through the use of remote data entry equipment.

PB-242 040/4GA PC$5.25/MF$2.25
National Environmental Research Center, Cincinnati, Ohio.
NERC 74 Annual Report.
Mar 75, 105p EPA/670/9-75/002

Descriptors: *Pollution, *Environmental quality, Research projects.
Identifiers: *National Environmental Research Center.

Research activities of each of the NERC-Cincinnati laboratories are summarized, and a number of contributions made by the staff members to international activities of EPA are highlighted. Certain projects from the research activities have been chosen for special mention in the text. As this report indicates, FY 1974 has witnessed a significant step forward in the Cincinnati mission to develop pollution control technology in the areas of municipal and industrial waste treatment, municipal water supplies and systems, solid and hazardous waste disposal, pollution identification methodology and monitoring, and toxicological health effects.

PB-242 041/2GA PC$3.25/MF$2.25
Metropolitan Transportation Commission, Berkeley, Calif.
Institutions and Life Styles Work Plan. Phase I, Research Plan,
Troy Duster, and Claude Fischer. Jan 75, 22p
PD-11-6-75
Contract DOT-OS-30176
Prepared by Jefferson Associates, Inc., San Francisco, Calif.

Descriptors: *Transportation planning, *Rapid transit railways, *Social effect, *Life styles, Political objectives, Family relations, Students, Low income groups, Ethnic groups, Project management, Criteria, Contractors, California.
Identifiers: BART(Bay Area Rapid Transit), Bay area rapid transit, *San Francisco(California).

Research plan outlining central institutions most likely to be affected by BART, most feasible for study, and most likely to produce findings of transferability to other settings for policy-related decisions. Second, selected aspects of various kinds of life-styles are reviewed and suggestions and hypotheses presented for further study of both institutions and life-styles (I&LS). The methodologies are designed to inter-connect from different angles in the study of the same problem, with a combination of ethnographic, observational, and survey research supplemented by document monitoring and analysis.

PB-242 043/8GA PC$6.25/MF$2.25
Wichita Falls, Tex. USAC Project.
Systems Status Summary Application Completion Report.
31 Jan 75, 170p* USAC-WFT2-5010
Contract HUD-H-1217

Descriptors: *Local government, *Urban information systems, *Records management, *Financing, Texas, Management information systems, Personnel management, Costs, Documentation, Computer technology, Benefit cost analysis, Management planning.
Identifiers: *Wichita Falls(Texas), Integrated municipal information systems, USAC project.

This report is from a series produced by the city of Wichita Falls, Texas, covering activities from systems analysis through implementation and evaluation of urban information systems. Objectives are to advise management personnel of the current financial and manhour status of the various application groups, and to review the former status and estimate future status of each application. Additionally, this subsystem is used to generate monthly progress reports.

PB-242 058/6GA PC$4.25/MF$2.25
Federal Highway Administration, Washington, D.C.
Federally Coordinated Program of Research and Development in Highway Transportation. Introduction and Summary.
1 Jan 75, 64p* FHWA/RD-FCP-001
Paper copy also available in set of 7 reports as PB-242 057-SET, PC$42.00.

Descriptors: *Highway transportation, *Highway planning, Design standards, Flood control, Earthquakes, Highways, Construction, User needs, Legislation, Environmental issues, Safety engineering.
Identifiers: DOT/4CZ, DOT/3B.

The research program can be defined as an array of the most urgent problems facing local, State and Federal highway officials who are responsible for the planning, location, design, and operation of transportation facilities. These problems include the research requirements resulting from the: experience gained in the construction and operation of the highway system; occurrence of natural phenomena such as floods and earthquakes; increased highway-user demands; environmental impact of planned and existing highways on the local community; and the requirements of new legislation.

PB-242 059/4GA PC$11.50/MF$2.25
Federal Highway Administration, Washington, D.C.
Federally Coordinated Program of Research and Development in Highway Transportation. Volume 1. Improved Highway Design and Operation for Safety.
1 Jan 75, 468p* FHWA/RD-FCP-002
Paper copy also available in set of 7 reports as PB-242 057-SET, PC$42.00.

Descriptors: *Highway transportation, *Highway planning, Safety engineering, Design standards, Traffic control, Accident prevention, Construction.
Identifiers: DOT/4CZ, DOT/3B.

This category is addressed to the Congressional authorization under the Highway Safety Act of 1970 to conduct safety research related to the 'three and one-half standards' of the highway safety program for which FHWA is responsible as well as other safety-related activity. There are a total of sixteen active projects under this category, eight of which relate to geometrics and traffic control for safety, two deal with operations under adverse environments, two with accident analysis and reduction strategy, and four with new hardware or construction techniques to improve safety.

PB-242 060/2GA PC$6.25/MF$2.25
Federal Highway Administration, Washington, D.C.
Federally Coordinated Program of Research and Development in Highway Transportation. Volume 2. Reduction of Traffic Congestion and Improved Operational Efficiency.
1 Jan 75, 173p* FHWA/RD-FCP-003
Paper copy also available in set of 7 reports as PB-242 057-SET, PC$42.00.

Descriptors: *Highway transportation, *Highway planning, Vehicular traffic control, Traffic congestion, Traffic peaks, Traffic patterns, Diverting, Traffic signals.
Identifiers: DOT/4CZ, DOT/3B.

Existing highway facilities are often taxed beyond their capacity to move traffic efficiently and consistent with motorists' desires and expectations. Congestion is found not only during the normal peak morning and evening periods but increasingly during noontime and on weekends during recreational and city-to-city travel. However, capacity is often sufficient within the travel corridors to handle traffic demands. The problem is that motorists are not aware of its existence and become trapped on a congested facility. The research to be carried out is concerned with providing improved design for new facilities and greatly increasing the operational efficiency of existing highways by improved utilization (more people per vehicle) and by keeping the demand-capacity relationship balanced through signal timing and rerouting of traffic.

PB-242 061/0GA PC$7.00/MF$2.25
Federal Highway Administration, Washington, D.C.
Federally Coordinated Program of Research and Development in Highway Transportation. Volume 3. Environmental Considerations in Highway Design, Location, Construction and Operation.
1 Jan 75, 185p* FHWA/RD-FCP-004
Paper copy also available in set of 7 reports as PB-242 057-SET, PC$42.00.

Descriptors: *Highway transportation, *Highway planning, Environmental issues, Pollution, Ecology, Esthetics.

Identifiers: DOT/4CZ, DOT/3B.

The thrust of the physical research portion of the program is to reduce the detrimental impact of the highway upon its environment by reducing air and water pollution and by searching for means to both evaluate and minimize noise pollution. The socio-economic problems related to these pollutants are investigated along with other presently unquantifiable factors to endeavor to determine their levels of acceptance and influence upon properties in the immediate vicinity of the highway. The ultimate goal will be the provision of a set of tools or guides that can be utilized by a decisionmaker in designing and locating a transportation corridor.

PB-242 062/8GA PC$7.25/MF$2.25
Federal Highway Administration, Washington, D.C.
Federally Coordinated Program of Research and Development in Highway Transportation. Volume 4, Improved Materials Utilization and Durability.
1 Jan 75, 202p* FHWA/RD-FCP-005
Paper copy also available in set of 7 reports as PB-242 057-SET, PC$42.00.

Descriptors: *Highway transportation, *Highway planning, Maintenance, Construction materials, Soil mechanics, Pavements, Durability.
Identifiers: DOT/4CZ, DOT/3B.

The program of materials research is primarily designed to concentrate on a limited number of problems in order to bring about significant pay-offs within a short period of time. Another criterion is the need to be responsive to the public's growing concern with environmental pollution. The highway industry can make a significant positive contribution toward alleviating this problem, particularly in our major cities, by devision procedures for converting industrial and household wastes into useful highway products. The FCP projects provide a coordinated effort in bringing about short range gains in materials research as well as continued development of new basic knowledge needed for long range improvements.

PB-242 063/6GA PC$8.75/MF$2.25
Federal Highway Administration, Washington, D.C.
Federally Coordinated Program of Research and Development in Highway Transportation. Volume 5. Improved Design to Reduce Costs, Extend Life Expectancy and Insure Structural Safety.
1 Jan 75, 278p* FHWA/RD-FCP-006
Paper copy also available in set of 7 reports as PB-242 057-SET, PC$42.00.

Descriptors: *Highway transportation, *Highway planning, Construction materials, Tunneling(Excavations), Highway bridges, Flood control, Flexible pavements, Maintenance, Culverts.
Identifiers: DOT/4CZ, DOT/3B.

Under this program category, coordinated research is undertaken to provide for (a) improved protection against the natural hazards of earthquake, wind, and flooding; (b) improvements in highway tunneling technology for future highways to increase construction rate and safety; (c) technical information to develop methods of flaw detection in structural members and bridge failure criteria for use in the national bridge safety inspection program; (d) new methodology for the design of flexible pavements to deal with measuring and relating materials properties to the performance of pavements under load-associated and environmental stresses; (e) exploitation of new materials and improved methods in structural rehabilitation and serviceability enhancement of damaged pavement systems by innovative patching of layered systems and new overlay design techniques; and (f) the examination of investment strategy for pavements expected to carry high traffic volumes to determine whether higher initial costs are justifiable as a trade-off for minimizing maintenance.

PB-242 064/4GA PC$4.25/MF$2.25
Federal Highway Administration, Washington, D.C.
Federally Coordinated Program of Research and Development in Highway Transportation. Volume 6. Construction, Maintenance, Implementation, and Management.
1 Jul 73, 68p* FHWA/RD-FCP-007
Paper copy also available in set of 7 reports as PB-242 057-SET, PC$42.00.

Descriptors: *Highway transportation, *Highway planning, Research and development, Research management, Construction materials, Traffic control, Maintenance.
Identifiers: DOT/4CZ, DOT/3B.

The Federally Coordinated Program emphasizes the development and transfer of research results into practice; e.g., bridging the gap between research and operations. The objective of this category is to stimulate and expand the application and practical use of the products of highway research and development. To achieve this objective, the program will emphasize the development of an environment that is conducive to nationally coordinated and cooperative implementation efforts by the Federal Highway Administration, State highway agencies and other highway organizations. It will also emphasize systematic management and the assessment of the success of implementation including the benefits realized.

PB-242 070/1GA PC$7.00/MF$2.25
Stanford Research Inst., Menlo Park, Calif.
Arson, Vandalism and Violence: Law Enforcement Problems Affecting Fire Departments,
Kendall D. Moll. Mar 74, 180p*
Grant LEAA-NI-71-126G
Paper copy also available from GPO as SN-2700-00251.

Descriptors: *Fire departments, *Urban areas, Problem solving, Surveys, Behavior, Factor analysis, Recommendations, Urban planning.
Identifiers: *Violence, Arson, False alarms, Bomb threats, Harassment.

Fire department problem data covering the period 1968 through 1971 were gathered by the use of questionnaires, field visits, and a review of relevant literature. Six major areas of violence were covered: building fires attributed to arson and suspected arson; false alarms; acts of physical violence against fire departments during riots and civil disorders; isolated acts of harassment directed against fire department personnel, equipment and facilities; and bomb threats and bomb incidents. The study dealt specifically with each of the areas of violent behavior, attempting to identify the major contributions to the problem, extent of the problems, and possible avenues for alleviation of the effects of violent behavior on fire departments. The author strongly suggests that greater interservice cooperation with the police is needed.

PB-242 088/3GA PC$5.25/MF$2.25
Charlotte, N.C. USAC Project.
Traffic Control Device Inventory Module Computer Program Descriptions.
Apr 75, 121p* USAC-CNCO-0184, MIS-4302/001/01
Contract HUD-H-1216

Descriptors: *Local government, *Urban information system, *Traffic control, North Carolina, Modules, Computer programming, Equipment, Management information systems, Inventories, Data processing, Data files.
Identifiers: *Charlotte(North Carolina), USAC project, Integrated municipal information systems.

The report is from a USAC series produced by the city of Charlotte. The document provides detailed technical information on the design, development and verification testing of the IMIS module computer program package for the traffic control device inventory module. Information is provided in sufficient detail to accommodate the transfer of responsibility for program adaption, error checking, and modification from the original program developers to other parties. Also included is an indication of the tasks (as set forth under computer program requirements in the module design specifications) implemented by the program set described. This document describes the operational roles and interrelationships of the computer programs which support the initially implemented module capabilities. Included is a complete and detailed description of each computer program (excluding vendor-supplied system software) used in module operations.

PB-242 090/9GA PC$11.50/MF$2.25
Charlotte, N.C. USAC Project.
The Relocation Services Module Design Specification.
Feb 75, 470p* USAC-CNCO-0142, MIS-3301/011/02
Contract HUD-H-1216

Descriptors: *Local government, *Urban information systems, *Urban relocation, North Carolina, Management information system, Government policy, Computer technology, Residential buildings, Office buildings, Municipal services, Business organizations, Urban renewal.
Identifiers: USAC project, *Charlotte(North Carolina), Displaced groups.

The report is from a USAC series produced by the city of Charlotte, covering activities from systems analysis through implementation and evaluation of urban information system. The Relocation Resources Module Design Specification provides current information, such as physical characteristics, cost or lease price, and location, address, on available housing and business locations. Also provided is the entry and retrieval of data on potential relocatees and status information which contains the number and location of each address inspected by the relocatee.

PB-242 107/1GA PC$7.00/MF$2.25
Detroit Metro Water Dept., Mich.
Sewerage System Monitoring and Remote Control.
Final rept.,
Thomas R. Watt, Robert G. Skrentner, and Antenore C. Davanzo. May 75, 195p*
EPA/670/2-75-020

Descriptors: *Combined sewers, *Overflows, *Remote control, *Water pollution control, Control equipment, Storms, Runoff, Monitors, Sluice gates, Telemetry, Rain gages, Waste water, Installing, Water storage, Pumping, Cost reduction, Operations.
Identifiers: Storm water runoff.

The publication is the final report of a demonstration project to apply sewer system monitoring and remote control techniques to reduce pollution of receiving waters from combined sewer overflows and storm wastewater pumping. The monitoring system includes telemetering rain gages, sewer level sensors and overflow sensors and a central computer and data logging facility. Wastewater pump stations and certain key regulators were remotely controlled

to allow in-system storage. Remotely controlled sluice gates were installed in a sewer to study the feasibility of using dry weather flow to flush sewers. The report includes a detailed discussion and evaluation of the monitoring and remote control equipment, installation details, the concept of the monitoring and remote control equipment, installation details, the concept of in-system storage, and the operation of the system based on an 18-month study period. Detroit has found that many of the larger sewers are not used to capacity during storms. Utilization of system monitoring and remote control techniques has resulted in a significant reduction in the volume of combined sewer overflows and storm wastewater pumping as well as reduced operation and maintenance costs.

PB-242 109/7GA PC$3.75/MF$2.25
Pacific Northwest Environmental Research Lab., Corvallis, Oreg.
Deer Lake, Marquette County, Michigan.
Final rept.
Feb 75, 39p Working Paper-192
Prepared in cooperation with National Environmental Research Center, Las Vegas, Nev., Michigan Dept. of Natural Resources, Lansing, and Michigan National Guard, Lansing.

Descriptors: *Water pollution, *Deer lake, Water quality, Inorganic phosphates, Inorganic nitrates, Pollution abatement, Nutrients, Bioassay, Watersheds, Water quality management, Michigan.
Identifiers: Eutrophical, *Water quality data, Marquette County(Michigan).

Annual total phosphorus and total nitrogen loadings to the lake were estimated and subdivided according to either point or non-point source origin. An assessment of the lake's trophic condition and limiting nutrient is also provided. All data collected by the U.S.E.P.A. National Eutrophication Survey during the one year study of the lake and its tributaries are included.

PB-242 115/4GA PC$4.75/MF$2.25
Michigan State Univ., East Lansing. Inst. of Water Research.
Continuous Automated Monitoring of Chemical and Physical Characteristics of the Red Cedar River.
Red Cedar River Series rept. no. 8,
Thomas Wayne Hardgrove, Robert C. Ball, and Marvin E. Stephenson. Sep 69, 96p MSU-IWR-TR-69-0008

Descriptors: *Water quality, *Red Cedar River, Chemical properties, Monitoring, Dissolved gases, Oxygen, Temperature measurement, Resistance, Alkalinity, Inorganic phosphates, Chlorides, pH, Turbidity, Sediments, Plankton, Tables(Data), Theses, Michigan.
Identifiers: Dissolved oxygen, Periphyton.

A continuous automated monitor on the Red Cedar River at East Lansing, Michigan, was operated from August 1967 to August 1968. Dissolved oxygen, water temperature, specific conductance, and pH were measured. In addition, total alkalinity, total phosphorus concentration, chloride and benthoplankton concentration were spot checked. Seasonal patterns and possible interrelationships of the various parameters were sought.

PB-242 116/2GA PC$4.25/MF$2.25
Michigan State Univ., East Lansing. Inst. of Water Research.
Water Quality Studies on the Kalamazoo River.
Technical rept. no. 5 (Final), 1 Jul 64-30 Jun 66,
Allen W. Knight, and George H. Lauff. Sep 69, 72p MSU-IWR-TR-69-0005
Sponsored in part by Office of Water Resources Research, Washington, D.C.

Descriptors: *Water pollution, *Industrial wastes, *Kalamazoo River, Dissolved gases, Oxygen, Paper mills, Silts, Chemical properties, Physical properties, Tables(Data), Bacteria, Fishes, pH, Alkalinity, Nutrients, Biochemical oxygen demand.
Identifiers: *Water quality data, Dissolved oxygen.

A study was made of the Kalamazoo River to ascertain conditions just prior to a pollution-abatement program. The river was found grossly polluted in a 20-mile stretch below the City of Kalamazoo. The decomposition of organic matter in the water and in extensive silt accumulations frequently depleted the dissolved oxygen for 20 miles or more below Kalamazoo. Sewer fungus covered the surface of the sludge deposits and stationary objects in the water, while extensive numbers of sludge worms frequently occurred as an enormous red fringe along the river margins. Only a few of the more tolerant macroinvertebrates and fish occurred in the very polluted zone. In the lower reaches of the river, considerable self-purification was accomplished, accompanied by a return of many of the macroinvertebrates and game fish.

PB-242 132/9GA PC$3.75/MF$2.25
TRW/Environmental Services, Vienna, Va.
Implementation Plan Review for Vermont as Required by the Energy Supply and Environmental Coordination Act.
Final rept.
Apr 75, 38p EPA/450/3-75-015
Contract EPA-68-02-1385

Descriptors: *Air pollution, *State programs, *Vermont, Combustion products, State planning, Regulations, Sources, Revisions, Assessments, Standards, Inventories, Particles, Sulfur dioxide, Fuels, Electric power plants.
Identifiers: *Air pollution abatement, *Implementation air pollution planning program, Air pollution standards, Air quality maintenance, Stationary sources.

Section 4 of the Energy Supply and Environmental Coordination Act of 1974, (ESECA) requires EPA to review each State Implementation Plan (SIP) to determine if revisons can be made to control regulations for stationary fuel combustion sources without interfering with the attainment and maintenance of the national ambient air quality standards. This document, which is also required by Section 4 of ESECA, is EPA's report to the State indicating where regulations might be revised.

PB-242 133/7GA PC$3.75/MF$2.25
Environmental Protection Agency, Research Triangle Park, N.C. Office of Air Quality Planning and Standards.
Implementation Plan Review for Wisconsin as Required by the Energy Supply and Environmental Coordination Act.
Mar 75, 59p EPA/450/3-75-032

Descriptors: *Air pollution, *State programs, *Wisconsin, Combustion products, State planning, Regulations, Sources, Revisions, Assessments, Standards, Inventories, Particles, Sulfur dioxide, Nitrogen oxides, Fuels, Electric power plants.
Identifiers: *Air pollution abatement, *Implementation air pollution planning program, Air pollution standards, Air quality maintenance, Stationary sources.

Section 4 of the Energy Supply and Environmental Coordination Act of 1974, (ESECA) requires EPA to review each State Implementation Plan (SIP) to determine if revisions can be made to control regulations for stationary fuel combustion sources without interfering with the attainment and maintenance of the national ambient air quality standards. This document, which is also required by Section 4 of ESECA, is EPA's report to the State indicating where regulations might be revised.

PB-242 134/5GA PC$3.75/MF$2.25
TRW/Environmental Services, Vienna, Va.
Implementation Plan Review for Rhode Island as Required by the Energy Supply and Environmental Coordination Act.
Final rept.
Apr 75, 36p EPA/450/3-75-050
Contract EPA-68-02-1385

Descriptors: *Air pollution, *State programs, *Rhode Island, Combustion products, State planning, Regulations, Sources, Revisions, Assessments, Standards, Inventories, Particles, Sulfur dioxide, Fuels, Electric power plants.
Identifiers: *Air pollution abatement, *Implementation air pollution planning program, Air pollution standards, Air quality maintenance, Stationary sources.

Section 4 of the Energy Supply and Environmental Coordination Act of 1974, (ESECA) requires EPA to review each State Implementation Plan (SIP) to determine if revisions can be made to control regulations for stationary fuel combustion sources without interfering with the attainment and maintenance of the national ambient air quality standards. This document, which is also required by Section 4 of ESECA, is EPA's report to the State indicating where regulations might be revised.

PB-242 135/2GA PC$4.25/MF$2.25
TRW/Environmental Services, Vienna, Va.
Implementation Plan Review for Connecticut as Required by the Energy Supply and Environmental Coordination Act.
Final rept.
Apr 75, 56p EPA/450/3-75-051
Contract EPA-68-02-1385

Descriptors: *Air pollution, *State programs, *Connecticut, Combustion products, State planning, Regulations, Sources, Revisions, Assessments, Standards, Inventories, Particles, Sulfur dioxide, Fuels, Electric power plants.
Identifiers: *Air pollution abatement, *Implementation air pollution planning program, Air pollution standards, Air quality maintenance, Stationary sources.

Section 4 of the Energy Supply and Environmental Coordination Act of 1974, (ESECA) requires EPA to review each State Implementation Plan (SIP) to determine if revisions can be made to control regulations for stationary fuel combustion sources without interfering with the attainment and maintenance of the national ambient air quality standards. This document, which is also required by Section 4 of ESECA, is EPA's report to the State indicating where regulations might be revised.

PB-242 136/0GA PC$4.75/MF$2.25
Massachusetts Inst. of Tech., Cambridge. Dept. of Mechanical Engineering.
Design Considerations for a Pilot Process for Separating Municipal Refuse.
Final rept.,
David Gordon Wilson, and Stephen David Senturia. May 75, 88p EPA/670/2-75-040
Grant EPA-R-800786

Descriptors: *Solid waste disposal, *Refuse disposal, *Materials recovery, *Separators, Reclamation, Detectors, Infrared detectors, Size screening, Metal scrap, Glass, Wood, Aluminum, Steel, Plastics, Paper, Classifiers, Materials handling.
Identifiers: Waste recycling, *Sorting, Metal recycling, Paper recycling, Glass recycling.

Separating municipal solid waste into its valuable and recycleable elemental components is examined here in terms of various mechanical

engineering schemes and processes that might best accomplish this task. Although past efforts have concentrated on first reducing the particle size by shredding, this investigation considered the advantages of whole-item coding and sorting without the expensive shredding operation. The result was an interesting base technology for a proposed pilot plant design that could potentially redirect future resource recovery efforts in solid waste.

PB-242 161/8GA PC$10.50/MF$2.25
IBM Federal Systems Div., Gaithersburg, Md.
Comprehensive Data Handling System, Emissions Inventory/Permits and Registration Subsystem (EIS/P and R) Program: Documentation and Users Guide.
Final rept. Aug 72-Feb 75.
Feb 75, 421p EPA/450/3-74-045-a
Contract EPA-68-02-0638

Descriptors: *Air pollution, *Data retrieval, Computer programs, Data files, Inventories, Licenses, Compatibility.
Identifiers: Registration, Permits, Comprehensive Data Handling System.

When dealing with atmospheric pollution, it is necessary to amass, catalog, sort, evaluate, and perform calculations upon large volumes of data. The Emissions Inventory/Permits and Registration Subsystem (EIS/P&R) provides air pollution control agencies with the capability to create and maintain their own emission inventory and permit or registration data base and to retrieve data and generate reports from that data base. This report contains a Users Guide with each program described, input requirements described, field descriptions, etc. The system has an extremely powerful retrieval capability which allows the user to retrieve on practically and data field in the master file. The system also allows the user to generate his semiannual quarterly report with a minimum of effort.

PB-242 173/3GA
Mag Tape $150.00;Foreign $190.00
Reading, Pa. USAC Project.
Reading USAC Project: Parts and Supplies Inventory COBOL Program, Release Number One.
Software,
Harold George, and Sal Rumore. May 75, 1 reel mag tape HUD/DF-74/015
Contract HUD-H-1212
Specify tape recording mode desired: 9 track, 800 or 1600 bpi, odd parity, EBCDIC; or 7 track, 556 or 800 bpi, odd or even parity, BCD. Documentation available.

Descriptors: *Software, *Local government, *Urban information systems, *Spare parts, Supply management, Inventory control, Magnetic tapes, COBOL, Management information systems, Decision making, Cost minimization, Computer programs, Pennsylvania, Data acquisition.
Identifiers: *Reading(Pennsylvania), USAC project.

The purpose of the Parts and Supplies Inventory Module is to collect information from departments and to maintain a comprehensive parts and supplies inventory at minimum cost, to supply management with information periodically and on demand, and to offer ready access to selected bureau inventory facts. It supplies timely and accurate information necessary for making effective management decisions and for producing and keeping the inventory current. There are 4 programs recorded on the tape...Technical documentation describing this module include, USAC-RPA-3252, Design Specifications for the Parts and Supplies Inventory Module; USAC-RPA2-4052, Program Specification for the Parts and Supplies Inventory Module; USAC-RPA2-7052, The Parts and Supplies Inventory Module User Manual. 32K bytes of core storage and 32 M bytes of disk storage are required to operate this module on a UNIVAC 9300 Model II computer....Software Description: The programs are written in UNIVAC 9300 Model II COBOL programming language for implementation on a UNIVAC 9300 Model II computer using the UNIVAC NCOS operating system, revision 4.0 0S500. The data base management system is Reading DMT version 1, release 1, level 1.

PB-242 174/1GA PC$8.50/MF$2.25
Boating Industry Associations, Chicago, Ill.
Analysis of Emissions from Outboard Two Cycle Marine Engines.
Final rept.,
W. J. Weber, Jr., D. E. Cole, and J. C. Posner.
Jun 75, 266p EPA/670/2-75-061
Grant EPA-R-801799
Prepared by Michigan Univ., Ann Arbor. See also PB-242 175, PB-242 176 and PB-242 177.

Descriptors: *Outboard engines, *Motor boats, *Exhaust gases, *Oil pollution, *Lakes, Two stroke cycle engines, Hydrocarbons, Sampling, Chemical properties, Gas chromatography, Water chemistry, Condensates, Physical properties, Crankcases, Drainage, Toxicity, Fishes, Gasoline, Michigan.
Identifiers: *Air pollution, *Water pollution.

The work herein reported is the University of Michigan's contribution to a larger scope dealing with the environmental impacts of outboard engine usage on small lake systems. This part of the total project is concerned with laboratory investigations. A wide variety of two-stroke engines were run under load conditions and the emissions, both condensable and noncondensables, analyzed. The influence of maintenance on emissions was also examined and found to have little effect. Crankcase drainage constituted only a small fraction of the total hydrocarbons emitted and was enriched in oil over the fuel. Exhaust products which one could reasonably expect to be condensable in a water-column constituted less than 10% of fuel fed in all cases and usually considerably less. The major portion of the water condensable aromatics evaporated fairly rapidly from the receiving water, but a portion was non-volatile. Analytical methods for field study were developed and the toxicity of both condensed exhaust and individual compounds in gasoline to goldfish were determined.

PB-242 175/8GA PC$9.50/MF$2.25
Boating Industry Associations, Chicago, Ill.
Analysis of Pollution from Marine Engines and Effects on the Environment.
Final rept.
Jun 75, 333p EPA/670/2-75-062
Grant EPA-R-801799
Prepared by Environmental Control Technology Corp., Ann Arbor, Mich. See also PB-242 174, PB-242 176 and PB-242 177.

Descriptors: *Outboard engines, *Motor boats, *Exhaust gases, *Oil pollution, *Lakes, *Aquatic biology, Sampling, Hydrocarbons, Crank cases, Metals, Water chemistry, Benthos, Sediments, Biomass, Plankton, Chlorophylls, Fishes, Biological productivity, Michigan.
Identifiers: Two stroke cycle engines, Water pollution effects(Plants), Water pollution effects(Animals), Heavy metals, Ecology, *Water pollution, Fresh water biology, Air pollution.

The objective of the study was 'to obtain sufficient laboratory and field data to be able to predict the number of outboard engines which can be operated on any particular body of water without causing adverse effects on the aquatic environment.' To achieve this objective four small natural bodies of water were subjected to outboard engine emissions three times greater than saturation (maximum) levels occurring under 'real world' boating conditions. These natural water bodies were stressed at these high levels with outboard engine exhaust emissions for a period of three years. The study showed that there were no 'dramatic' or acute changes in the physical, chemical or biological characteristics of the water or sediments of the test lakes at these high stressing levels.

PB-242 176/6GA PC$7.50/MF$2.25
Boating Industry Associations, Chicago, Ill.
Analysis of Pollution from Marine Engines and Effects on the Environment. Southern Lakes.
Final rept. Apr 71-Apr 73,
H. L. Davis, and K. D. Wilson. Jun 75, 244p
EPA/670/2-75-063
Grant EPA-R-801799
Prepared by Environmental Science and Engineering, Inc., Gainesville, Fla. See also PB-242 174, PB-242 175 and PB-242 177.

Descriptors: *Outboard engines, *Motor boats, *Exhaust gases, *Oil pollution, *Lakes, *Aquatic biology, Water chemistry, Nutrients, Physical properties, Metals, Invertebrates, Algae, Biological productivity, Aquatic plants, Grasses, Carbon dioxide, Sampling, Florida.
Identifiers: Two stroke cycle engines, Dissolved oxygen, Water pollution effects(Plants), Water pollution effects(Animals), Ecology, *Water pollution, Air pollution, Fresh water biology.

The study was conducted to determine the effects of two-cycle outboard engine emissions on Florida lakes using leaded fuel and drained and drainless engines. Field investigations were performed in three natural lakes of two to ten acres near Gainesville, Florida. One lake was treated with 'drainless' engines and one with engines which 'drained' unburned fuel into the water. The third lake served as a control. Biological components and water quality conditions in the three lakes were monitored by routine standard procedures for a time period of 18 months during which motors were operated at the rate of 2.4 gallons of fuel per million gallons of water per day. During the course of the field investigation, there was no overt evidence of any significant effect of motor emissions on the benthic macroinvertebrates, phytoplankton, periphyton, and fish taste; although the data indicated that plant production in the grassbeds may have increased as a result of engine operation. This increase in plant production was evident during the growing season when the availability of carbon dioxide limited plant growth in the grassbed community.

PB-242 177/4GA PC$4.25/MF$2.25
Boating Industry Associations, Chicago, Ill.
Analysis of Pollution from Marine Engines and Effects on the Environment. Summary Report.
Final rept.
Jun 75, 70p EPA/670/2-75-064
Grant EPA-R-801799
See also PB-242 174, PB-242 175 and PB-242 176.

Descriptors: *Outboard engines, *Motor boats, *Exhaust gases, *Oil pollution, *Lakes, *Aquatic biology, Field tests, Two stroke cycle engines, Water analysis, Hydrocarbons, Crankcases, Drainage, Water chemistry, Benthos, Plankton, Fishes, Michigan, Florida.
Identifiers: Fresh water biology, Ecosystems, Water pollution effects(Plants), Water pollution effects(Animals), Ecology, *Water pollution, Air pollution.

The research project involved laboratory and field investigations. The northern lakes--field study was conducted by Environmental Control Technology Corporation, Ann Arbor, Michigan. The southern lakes--field study was conducted by Environmental Science and Engineering,

Inc., Gainesville, Florida. To achieve the project objective four ponds were subjected to outboard engine emissions at a rate calculated to be three times greater than that from saturation boating levels. Some marginal changes in the lakes biota were noted but the differences were such that it is not certain whether they were from natural or stress effects. As a result it was not possible to determine conclusively the precise point at which outboard emissions effect the aquatic environment. Based on the results, it is plausible to conclude, however, that because of the high stress levels employed in this study, outboard motor emissions do not significantly affect aquatic ecosystems.

PB-242 200/4GA PC$5.95/MF$5.95
Urban Inst., Washington, D.C.
Fiscal Impacts of Land Development. A Critique of Methods and Review of Issues,
Thomas Muller. May 75, 68p* UI-176-214-3, URI-90000
Library of Congress Catalog Card no. 75-03682.

Descriptors: *Land development, *Fiscal policies, *Economic studies, Survey methods and procedures, Economic impacts, Private financing programs, Analysis of variance, Reference groups, Services, Household relationships, Demography, Income distribution, Housing characteristics, Social effect, Short term financing.

A large number of recent studies attempt to assess what the likely fiscal effects of proposed private development will be. That is, will the developments generate revenues in excess of the needed public expenditures or vice versa. The author surveys the studies of this question to determine the present state of the art and to suggest refinements aimed at improving future fiscal impact evaluation.

PB-242 203/8GA PC$6.25/MF$2.25
Colorado Univ., Denver. Center for Urban Transportation Studies.
Hitchhiking-A Viable Addition to a Multimodal Transportation System.
Final rept. Jun-Sep 74,
Kenneth E. Dallmeyer. Mar 75, 166p* NSF/SOS-GY-11486
Grant NSF-GY-11486

Descriptors: *Passenger transportation, *Transportation planning, Transportation methods, Interviews, Social characteristics, Attitudes, Legal opinion, Crimes, Statistical analysis, Traffic safety, Legislation, Regulations, Transportation management.
Identifiers: *Hitchhiking, Multimodal transportation, Car pools.

Data are presented on interviews with public officials and four surveys: (a) a general survey of 195 representative citizens; (b) police; (c) current hitchhikers; and (d) participants in the Fort Collins Community Car Pool (a prototype hitchhiking system). Data were obtained on the percentage of current hitchhikers (19%), drivers who pick up hitchhikers (31%), percent who ever hitchhiked or picked up hitchhikers (43%) (52%), social characteristics, crime statistics, ways of hitchhiking, opinions on the legal status of hitchhiking, and possible increased participation if certain reforms were made. Recommendations were (a) legalization of hitchhiking; (b) establishment of a voluntary system for registering hitchhikers; and (c) designation of hitchhiking areas along streets and highways where cars safely can pull over and stop.

PB-242 211/1GA PC$5.95/MF$5.95
Urban Inst., Washington, D.C.
Measuring Impacts of Land Development. An Initial Approach,
Philip S. Schaenman, and Thomas Muller. Dec 74, 95p* UI-173-214-1, URI-86000
Library of Congress Catalog Card no. 74-19854.

Descriptors: *Land development, *Land use, *Urban planning, Urban development, Economic impact, Neighborhoods, Urban sprawl, Environmental issues, Landscaping, Esthetics, Housing characteristics, Social effects.

The report outlines an approach to estimating the impacts of land development on a local jurisdiction. The emphasis is on evaluation of proposed developments, but much of the approach also applies to evaluating comprehensive plans and to evaluating past development. The report suggests specific measures and their associated data collection procedures for assessing impacts on economic, natural environment, aesthetic, public and private service, housin^, and social concerns. These measures and procedures are intended primarily to help local decision makers and their staffs confront land use decisions in a more systematic, comprehensive, and consistent way. The emphasis is on describing how citizens are likely to be affected and in terms that laymen can understand.

PB-242 238/4GA PC$3.75/MF$2.25
Geological Survey, Lakewood, Colo. Water Resources Div.
Hydraulic Characteristics and Water-Supply Potential of the Aquifers in the Vicinity of the Wastewater Treatment Plant, South Bend, Indiana.
Final rept.,
James R. Marie. May 75, 32p USGS/WRI-49-74, USGS/WRD-75/030

Descriptors: *Aquifers, *Dewatering, *Water supply, Ground water, Mathematical models, Drawdown, Simulation, Hydraulic conductivity, Pumping, Water table, Hydrogeology, Indiana.
Identifiers: *Water levels, South Bend(Indiana).

An intensive study was made of a 24-square mile area surrounding the South Bend wastewater treatment plant to: (1) Document the effects of dewatering about 40 feet of the 130-feet thick aquifer during construction at the plant; (2) define the hydrologic system in order to allow development of a predictive model; and (3) select and evaluate one possible water-supply development plan as a model demonstration.

PB-242 241/8GA PC$4.25/MF$2.25
Lane County Government, Eugene, Oreg.
Lane County USAC Project. TCDMS Development Initial Task Completion Report.
Mar 75, 54p* USAC-LCG2-0011
Contract HUD-H-2073
Report on Inter-Regional Information System/Telecommunications/Data Management System.

Descriptors: *Local government, *Urban information systems, *Telecommunication, *Data processing, Manuals, Management information systems, Computer technology, On line systems, Oregon.
Identifiers: Lane County(Oregon), USAC project.

This manual is from a USAC series produced by the Lane County Regional Information Systems Department. It contains an overview of the logical structure of the Telecommunications/Data Management System and detailed descriptions of each module in the system.

PB-242 252/5GA PC$3.75/MF$2.25
Geological Survey, Menlo Park, Calif. Water Resources Div.
Salt-Balance Study of Pauba Valley Upper Santa Margarita River Area, Riverside County, California.
Final rept.,
James W. Warner. Feb 75, 49p USGS-WRI-43-74, USGS-WRD-75-031
Prepared in cooperation with Joint Administration Committee of the Santa Margarita and San Luis Rey Watershed Planning Agencies, Calif.

Descriptors: *Aquifers, *Water quality management, *Inorganic salts, Ground water, Waste water, Fluid infiltration, Rainfall, Surface waters, Fluid flow, Sewage disposal, Water storage, Estimating, Sources, Agricultural wastes, Pauba Valley, California.
Identifiers: *Salt balance, Dissolved solids, Riverside County(California).

The purpose of the study was to develop a salt balance for Pauba Valley to aid in evaluating the alternative water-quality management plans. The salt balance was limited to the shallow aquifer system. The study included an evaluation of the effect on the salt balance of the proposed sewage-disposal site in Pauba Valley. The scope of the study included: (1) Collecting and analyzing drillers' logs to define the shallow aquifer system, (2) estimating precipitation inflow, (3) estimating both gaged and ungaged surface-water inflow, (4) estimating ground-water inflow and outflow, (5) estimating the quantity of imported and exported water, (6) estimating consumptive use, (7) estimating change in storage of ground water, (8) calculating salt gain and loss from the sources of inflow and outflow to the system, (9) calculating salt gain from agricultural salt loading from fertilizers and livestock waste, (10) estimating salt accumulation in the shallow aquifer, and (11) estimating the effects on the salt balance of the proposed sewage-disposal ponds.

PB-242 276/4GA PC$4.25/MF$2.25
Texas Transportation Inst., College Station.
Cost-Effectiveness Evaluation of Freeway Courtesy Patrols in Houston.
Interim rept. Sep 71-Oct 74,
Daniel B. Fambro. Oct 74, 54p TTI-2-18-72-165-16

Descriptors: *Freeways, *Traffic safety, *Vehicle monitoring systems, Cost effectiveness, Surveillance, Urban transportation, Transportation management, Texas.
Identifiers: *Motorist courtesy patrols, Houston(Texas), DOT/5A, DOT/3B.

Incidents, whether due to accidents or stalled vehicles, are a major cause of congestion on urban freeways. Besides causing inconvenience to motorists, incidents also create safety hazards on the freeway. To increase safety and to provide assistance and security to motorists District 12 of the Texas Highway Department has been operating a motorist courtesy patrol on some of Houston's freeways. A questionnaire study indicated that motorists aided by the patrol were overwhelmingly in favor of continuation of the program. The cost-effectiveness analysis showed the patrol to have a benefit-cost ratio of 2 to 1. Several additional benefits that could not be quantified are also discussed.

PB-242 288/9GA PC$4.75/MF$2.25
Texas Transportation Inst., College Station.
Evaluation of Full-Scale Experimental Concrete Highway Finishes.
Final rept. Sep 69-Sep 74,
W. B. Ledbetter, A. H. Meyer, and D. E. Ballard. Sep 74, 81p TTI-2-6-70-141-4F

Descriptors: *Concrete pavements, *Skid resistance, Surface properties, Texture, Wear resistance, Portland cement, Concrete construction, Tests.
Identifiers: DOT/5M, DOT/4CZ/CA.

Results on an evaluation of two sets of full-scale experimental concrete test sections are summarized. Eighteen experimental concrete

finishes were evaluated in terms of skid resistance under standard trailer water conditions and under simulated rainfall conditions. In addition the change in texture depths and skid values with time were measured. Results indicate that (1) texture depths of 0.060 in. or greater can easily and economically be constructed with 1/8 in. metal tines spaced closer than 1/2 in. apart, (2) under normal traffic conditions all concrete textures can be expected to wear-down approximately 25 to 35 percent during the first 1/2 year and then remain relatively unchanged for a prolonged period, (3) skid measurements made under standard trailer water conditions may not be indicative of real life conditions in wet weather, (4) low skid values could be obtained in almost any rainfall in which the pavement is completely wetted, and (5) under simulated rain conditions deep transverse texturing will result in the greatest improvement in skid values.

PB-242 296/2GA PC$7.00/MF$2.25
O'Brien and Gere Engineers, Inc., Syracuse, N.Y.
Bench-Scale High-Rate Disinfection of Combined Sewer Overflows with Chlorine and Chlorine Dioxide.
Interim rept. Nov 71-Mar 73,
Peter E. Moffa, Edwin C. Tifft, Jr., Steven L. Richardson, and James E. Smith. Apr 75, 193p EPA/670/2-75/021
Grant EPA-S-802400
Prepared in cooperation with Syracuse Univ., N.Y.

Descriptors: *Combined sewers, *Overflows, *Disinfection, *Sewage treatment, Waste water, Runoff, Chlorine, Chlorine oxides, Bioassay, Adenosine phosphates, Bacteria, Viruses, Dosage, Test methods, Efficiency, Purification.

A bench-scale study of high-rate disinfection of combined sewer overflows with chlorine and chlorine dioxide was performed to aid in the design and operation of full-scale prototype treatment facilities. Four logarithm reduction in three indicator bacteria and several common viruses were obtained with 25 mg/l chlorine or 12 mg/l chlorine dioxide in two-minutes contact time. Sequential addition of disinfectants enhanced the process such that only eight mg/l of chlorine followed in 15 to 30 seconds by two mg/l chlorine dioxide were necessary to obtain similar reductions.

PB-242 299/6GA PC$10.00/MF$2.25
Research Triangle Inst., Durham, N.C.
Investigation of Rural Oxidant Levels as Related to Urban Hydrocarbon Control Strategies.
Final rept. Jun 74-Feb 75.
Mar 75, 352p EPA/450/3-75-036
Contract EPA-68-02-1386

Descriptors: *Air pollution, *Rural areas, *Oxidizers, Assessments, Smog, Ozone, Nitrogen oxides, Hydrocarbons, Measurement, Aerial surveys, Atmospheric motion, Urban areas, Statistical distributions, Photochemical reactions.
Identifiers: Air quality data, Photochemical oxidants, Air quality maintenance.

A study was conducted in the Ohio Valley area in 1974 to investigate high rural oxidant concentrations above the NAAOS and their possible relationship to urban hydrocarbons. Data regarding the oxidant, nitrogen dioxide, and hydrocarbon relationships were obtained by sampling from a network consisting of five rural and six urban ground stations and an instrumented aircraft. Gases sampled were ozone, nitrogen oxides, and hydrocarbons. Gas chromatograms of grab samples collected at three rural ground stations near Columbus and during aircraft flights were used to identify hydrocarbon species and possible tracers indicative of urban-generated pollution. The implication is that the release of hydrocarbons and oxides of nitrogen from anthropogenic or biogenic sources, located in either an urban or rural area, all combine to generate appreciable quantities of ozone over wide areas.

PB-242 306/9GA PC$4.25/MF$2.25
TRW/Environmental Services, Vienna, Va.
Implementation Plan Review for Montana as Required by the Energy Supply and Environmental Coordination Act.
Mar 75, 51p EPA/450/3-75-021
Contract EPA-68-02-1385

Descriptors: *Air pollution, *State programs, *Montana, Combustion products, Regulations, Sources, Revisions, Assessments, Standards, Inventories, Particles, Sulfur dioxide, Nitrogen oxides, Fuels, Electric power plants.
Identifiers: *Implementation air pollution planning program, *Air pollution abatement, Air pollution standards, Air quality maintenance, Stationary sources.

Section 4 of the Energy Supply and Environmental Coordination Act of 1974, (ESECA) requires EPA to review each State Implementation Plan (SIP) to determine if revisions can be made to control regulations for stationary fuel combustion sources without interfering with the attainment and maintenance of the national ambient air quality standards. This document, which is also required by Section 4 of ESECA, is EPA's report to the state indicating where regulations might be revised.

PB-242 307/7GA PC$3.75/MF$2.25
TRW/Environmental Services, Vienna, Va.
Implementation Plan Review for Wyoming as Required by the Energy Supply and Environmental Coordination Act.
Mar 75, 33p EPA/450/3-75-022
Contract EPA-68-02-1385

Descriptors: *Air pollution, *State programs, *Wyoming, Combustion products, State planning, Regulations, Sources, Revisions, Assessments, Standards, Inventories, Particles, Sulfur dioxide, Nitrogen oxides, Fuels, Electric power plants.
Identifiers: *Air pollution abatement, *Implementation air pollution planning program, Air pollution standards, Air quality maintenance, Stationary sources.

Section 4 of the Energy Supply and Environmental Coordination Act of 1974, (ESECA) requires EPA to review each State Implementation Plan (SIP) to determine if revisions can be made to control regulations for stationary fuel combustion sources without interfering with the attainment and maintenance of the national ambient air quality standards. This document, which is also required by Section 4 of ESECA, is EPA's report to the State indicating where regulations might be revised.

PB-242 308/5GA PC$3.75/MF$2.25
TRW/Environmental Services, Vienna, Va.
Implementation Plan Review for Delaware as Required by the Energy Supply and Environmental Coordination Act.
Mar 75, 39p EPA/450/3-75-040
Contract EPA-68-02-1385

Descriptors: *Air pollution, *State programs, *Delaware, Combustion products, Regulations, Sources, Revisions, Assessments, Standards, Inventories, Particles, Sulfur dioxide, Nitrogen oxides, Fuels, Electric power plants.
Identifiers: *Implementation air pollution planning program, *Air pollution abatement, Air pollution standards, Air quality maintenance.

Section 4 of the Energy Supply and Environmental Coordination Act of 1974, (ESECA) requires EPA to review each State Implementation Plan (SIP) to determine if revisions can be made to control regulations for stationary fuel combustion sources without interfering with the attainment and maintenance of the national ambient air quality standards. This document, which is also required by Section 4 of ESECA, is EPA's report to the State indicating where regulations might be revised.

PB-242 331/7GA PC$4.75/MF$2.25
Smith (Wilbur) and Associates, Columbia, S.C.
Haddonfield Dial-A-Ride.
Final rept. Feb 72-Jun 74.
Dec 74, 78p UMTA-NJ-06-0002-74-5

Descriptors: *Urban transportation, *Dial a ride systems, Transit riders, Travel patterns, Motor vehicles, Services, Operating costs, Revenue, Scheduling, Automation, Transportation management, New Jersey.
Identifiers: Haddonfield(New Jersey), Demand responsive transportation systems, Computer applications, DOT/1A, DOT/2B.

The Haddonfield (New Jersey) Dial-A-Ride Project is one of about 60 demand-responsive transportation systems currently being used through-out the U.S. and Canada. The report delineates ridership trends, vehicle productivity, service quality, revenues and costs of operation. The objectives of the Project covered by this report were to: (1) provide accurate data for demand and cost analysis; (2) determine limits of a manually controlled scheduling system; (4) determine system parameters for a computer-controlled scheduling system; and (5) test the developmental computer-controlled scheduling system. Appendices contain a list of Haddonfield Dial-A-Ride reports and data collection and analysis procedures.

PB-242 358/0GA PC$4.75/MF$2.25
Fairfax County Office of Research and Statistics, Va.
Proposed Land Banking Program for Fairfax County,
Mary Elizabeth Holbein. 15 Jul 74, 99p
FXCO/ORS-75/7

Descriptors: *Land development, *Local government, *Management planning, Land acquisition, Land use, Moderate income housing, Low income housing, Legal opinions, Financial management, Virginia.
Identifiers: Fairfax County(Virginia), *Land banking.

The objective of land banking is to buy a site and hold it for eventual development. Land Banking can be large scale and used as a growth management tool. Or, it can be of a more specific purpose resulting in an advance acquisition. The holding time is relatively long where the program is utilized for growth management, and much shorter in the case of advanced acquisition. The document discusses the legal, financial and administrative structure of a land banking program, as applicable to Fairfax County in particular. The recommendations of the report are based on experiences of jurisdictions both here in the United States and in Europe. The recommendations include suggestions for various methods of financing the program and development strategies.

PB-242 376/2GA PC$11.50/MF$2.25
Hazen and Sawyer, New York.
Capabilities and Costs of Technology Associated with the Achievement of the Requirements and Goals of the Federal Water Pollution Control Act Amendments of 1972 for the Pulp and Paper Industry.
Final rept.
16 May 75, 470p* NCWQ-75/01
Contract WQ5AC003

Descriptors: *Industrial waste treatments, *Paper industry, *Water pollution control, *Pulp mills, Cost analysis, Industrial wastes, Technology assessment, Water quality, Performance, Objectives, Surveys, Water pollution standards, Economic analysis, Operating costs, Maintenance, Cost estimates.
Identifiers: SIC 2611, SIC 2621, SIC 2631, *Best technology.

Technologies are examined which are currently available or which are anticipated for the pulp and paper industry (SIC 2611, 2621, 2631) to meet water pollution abatement as required by Federal Water Pollution Control Act Amendments of 1972 (Public Law 92-500). Five levels of pollution abatement are reviewed including EOD (elimination of the discharge of pollutants) and levels promulgated by U.S. Environmental Protection Agency for 1977 (PBCTCA or best practical control technology currently available) and for 1983 (BATEA or best available technology economically achievable). Capital, operating and maintenance costs are given in 1973 dollars along with requirements for nonfinancial resources, and performance is stated in terms of resulting effluents. Study was based on examination of data from 486 mills representing 81 percent of total and 94 percent of production.

PB-242 377/0GA PC$3.25/MF$2.25
PEDCo-Environmental Specialists, Inc. Cincinnati, Ohio.
Updating the National Emissions Data System Point Source Inventory.
Final rept.
Nov 74, 13p EPA/450/3-75-056
Contract EPA-68-02-1001

Descriptors: *Air pollution, *Information systems, Sources.
Identifiers: *National emissions data system, Point sources.

The Environmental Protection Agency (EPA) requested and received Air Pollutant Emissions Reports (APER form OMB No. 158-R75) from a number of point-source facilites in the states of Illinois, Maryland, Michigan, Minnesota, Ohio, Pennsylvania, West Virginia, and Wisconsin. These data were used to update the National Emissions Data System (NEDS) point source emissions inventory.

PB-242 383/8GA PC$8.50/MF$2.25
Southern Research Inst., Birmingham, Ala.
A Survey of Technical Information Related to Fine-Particle Control.
Final rept.
Apr 75, 253p* SORI-EAS-74-351 EPRI-259

Descriptors: *Fly ash, *Particles, *Fines, *Air pollution control, *Toxicology, Electric power plants, Boilers, Trace elements, Public health, Particle size distribution, Epidemiology, Flue gases, Electrostatic precipitators, Scrubbers, Gas filters.
Identifiers: *Air pollution effects(Humans), Synergism. Fabric filters.

A survey was made of information available on subjects related to fine-particle fly-ash emissions from electric utility power boilers, with special attention to trace elements and other materials associated with fly ash that may affect health when inhaled. Information was obtained on (1) the concentrations and distribution of trace elements in fly ash, (2) the toxicology and epidemiology of fly-ash inhalation, (3) the methods used for measuring the particle-size distribution of fly ash and for determining the contents and nature of trace elements in it, and (4) the effectiveness of emission control devices in the removal of sub-micron particles of fly ash from flue gas.

PB-242 453/9GA PC$3.75/MF$2.25
Transport and Road Research Lab., Crowthorne (England).
Dial-a-Ride in Britain: Experience to Mid-1974 and Research Programme.
C. G. B. Mitchell, and R. Slevin. 1975, 38p
TRRL-Supplementary-123UC
See also report dated Aug 73, PB-230 740.

Descriptors: *Dial a ride systems, Urban transportation, Financial management, Revenue, Transportation planning, Great Britain.

The results of small-scale operations of dial-a-ride systems in Maidstone, Harrogate, Abingdon, Carterton and Eastbourne are reviewed. Despite institutional restrictions on the services two of the operations are close to financial viability when all revenue is included in the balance. The plans for an experimental dial-a-ride system in Harlow are described, and the programme of research and evaluations of dial-a-ride to be undertaken by Cranfield Centre for Transport Studies is summarized.

13C. Construction Equipment Materials, and Supplies

AD-A010 634/4GA PC$3.75/MF$2.25
Cold Regions Research and Engineering Lab Hanover N H
Mechanics of Cutting and Boring. Part 1: Kinematics of Transverse Rotation Machines.
Special rept.,
Malcolm Mellor. May 75, 34p Rept no. CRREL-SR-226

Descriptors: *Permafrost, *Earth handling equipment, *Kinematics, Excavation, Cutting tools, Cutting, Rates, Rock.

This report, which is one of a series on the mechanics of cutting and boring in rock, deals with the kinematics of machines such as disc saws, drum millers, rotary planers and bucket-wheel excavators, in which the rotary cutting element revolves about an axis that is normal to the direction of working travel. The analysis covers the geometry and motion of various components of the cutting system, touching on topics such as chipping depth, cutting transfer, excavation rate, tool trajectories, tool speeds, rake and relief angles on tools and tool layout. Worked examples are given to illustrate various points.

AD-A010 640/1GA PC$3.75/MF$2.25
Army Engineer Waterways Experiment Station Vicksburg Miss
Use of Fiber-Reinforced Concrete in Hydraulic Structures and Marine Environments.
Final rept.,
George C. Hoff. Jun 75, 30p Rept no. AEWES-Misc-Paper-C-75-4
Also pub. as Army Engineer Waterways Experiment Station, Vicksburg, Miss. Concrete Technology Information and Analysis Center, CTIAC-15.

Descriptors: *Reinforced concrete, *Dams, *Marine atmospheres, Hydraulic valves, Steel, Cavitation, Impact strength, Erosion resistance.
Identifiers: *Fiber reinforced concretes.

Four applications of fiber-reinforced concrete in hydraulic structures are reviewed. Included are repairs to sluiceways, spillways, and spillway aprons associated with dams, and also the construction of breakwater armor units. The use of fiber-reinforced concrete in these structures appears to improve cavitation and erosion resistance, and impact strength.

AD-A010 641/9GA PC$3.25/MF$2.25
Army Engineer Waterways Experiment Station Vicksburg Miss
New Concern over Alkali-Aggregate Reaction.
Final rept.,
Bryant Mather. May 75, 23p Rept no. AEWES-Misc-Paper-C-75-3
Also pub. as Army Engineer Waterways Experiment Station, Vicksburg, Miss. Concrete Technology Information and Analysis Center, CTIAC-17.

Descriptors: *Concrete, Rock, Chemical reactions, Alkali metal compounds, Silicon dioxide, Cements, Expansion, Fracture(Mechanics), Structures.
Identifiers: *Alkali aggregate reactions, Portland cements.

There are three reasons why there is new concern over alkali-aggregate reaction: (1) The simple cheap precaution of specifying 'low-alkali cement,' and obtaining it at no increase in price over cement not required to be low-alkali, will no longer be widely available. (2) Aggregates not previously regarded as reactive are being found to have reacted in concrete in old structures and to be associated with significant cracking and damage. (3) Serious early damage to concrete structures has occurred in places where it was previously unknown, especially in north Germany. Aggregate sources and rock type are discussed. A re-examination is made of the state of knowledge and the state of the use of knowledge in this area.

COM-75-10612/0GA PC$3.75/MF$2.25
National Bureau of Standards, Washington, D.C. Mechanics Div.
Fatigue Tests of Bituminous Membrane Roofing Specimens.
Technical note,
George F. Sushinsky, and Robert G. Mathey.
Apr 75, 37p NBS-TN-863
Paper copy also available from GPO as C13.46:863.

Descriptors: *Roofing, *Membranes, Bitumens, Fatigue(Materials), Fatigue tests, Test methods.

Tensile and flexural fatigue tests were performed on built-up roof membrane specimens (ASTM Designation: D2523-70) fabricated from four different material systems. The tensile fatigue tests were run under cyclic load control conditions while specimens tested in flexural fatigue were run under cyclic midspan displacement control. Tests were run at ambient laboratory conditions, generally 70 plus or minus 2F (21 plus or minus 1C), and at 0 plus or minus 2F (-18 plus or minus 1C). Curves based on the experimental results are plotted relating the peak load or displacement to the median fatigue lifetimes for specimens fabricated from each material. Performance criteria for roof membranes subject to fatigue loading are recommended.

N75-21669/7GA PC$7.25/MF$2.25
Martin Marietta Aerospace, Orlando, Fla.
Life Prediction of Materials Exposed to Monotonic and Cyclic Loading: A New Technology Survey.
W. F. Stuhrke, and J. L. Carpenter, Jr.. Jan 75, 214p NASA-CR-134750, OR-13319
Contract NAS3-17640

Descriptors: *Construction materials, *Cyclic loads, *Life (Durability), Abstracts, Environment effects, Fatigue (Materials), High temperature.

For abstract, see STAR 1313

PATENT-3 861 944
Not available NTIS
Atomic Energy Commission, Washington, D.C.
Method of Making Corrosion Resistant Concrete Articles.
Patent,

Meyer Steinberg, Lawrence E. Kukachka, and Anthony J. Ramano. Filed 6 Nov 72, patented 21 Jan 75, 3p PAT-APPL-303 753
Government-owned invention available for licensing. Copy of patent available Commissioner of Patents, Washington, D.C. 20231 $0.50.

Descriptors: *Corrosion prevention, *Patents, *Concrete pipes, Concrete, Impregnating, Coating processes, Styrene resins, Acrylonitrile copolymers, Methacrylates, Polymerization, Plastic coatings, Concrete products.
Identifiers: PAT-CL-117-72, Polymer concrete composites.

The patent describes concrete pipes rendered resistant to corrosion by a process in which the pipe is first impregnated with a liquid monomer which is then polymerized in situ followed by an application of a coating of a liquid monomer which is polymerized in situ followed by a second coating application which is polymerized in situ. Preferably the coating material has a higher viscosity than the impregnating material. The monomers disclosed are styrene, acrylonitrile, methyl methacrylate, isobornyl methacrylate and trimethylolpropane trimethacrylate. Mixtures of styrene and polyester are also disclosed. Polymerization may be carried out by thermal process using a catalyst or by the use of radiation.

PB-241 691/5GA PC$6.25/MF$2.25
Brookhaven National Lab., Upton, N.Y.
Introduction to Concrete-Polymer Materials,
L. E. Kukacka, A. Auskern, P. Colombo, J. Fontana, and M. Steinberg. Apr 75, 158p* BNL-195-25 FHWA-RD-75-507

Descriptors: *Handbooks, *Concrete, *Composite materials, Polymers, Reviews, Test methods, Impregnation, Polymerization, Bridge decks, Highways, Fabrication.
Identifiers: *Concrete polymer composites, Concrete durability, DOT/4BZ/BC.

The purpose of this text is to provide highway personnel with a working knowledge of concrete polymer development and application. Basic information necessary to begin experimental application of these materials is presented. The text presents discussions on the following: (1) a review of concrete-polymer materials development, (2) knowledge of polymer chemistry as applied to concrete-polymer materials, (3) knowledge of the technology required to produce concrete-polymer materials, (4) a description of the fundamental characteristics and properties of the composities, and (5) an in-depth study of the applications of concrete-polymer materials.

PB-242 441/4GA PC$4.75/MF$2.25
California Univ., Berkeley. Fire Research Group.
Behavior of Reinforced Concrete Under Variable Elevated Temperatures,
R. Iding, J. Lee, and B. Bresler. Apr 75, 79p UCB-FRG-75-8
Grant NSF-GI-43

Descriptors: *Reinforced concrete, *Fire resistance, Fire tests, Structural analysis, Thermal stresses, Thermal conductivity, Structural design, Fire safety.
Identifiers: Axial compression.

Results of a pilot study on the behavior of reinforced concrete exposed to elevated temperatures are reported. A series of experiments was conducted in which the thermal and structural responses of unreinforced and reinforced concrete prisms to various combinations of heating and axial compression loading cycles were measured. Exposures of up to 600F. (316C.) were studied using equipment developed for this experimental program. Recently developed computer programs used to simulate the experiments mathematically; these numerical solutions and the results of the experimental program are compared. Of particular interest was the validity of the mathematical models used in the computer programs to represent heat conduction and concrete cracking and crack closing due to thermal effects and axial compression.

13D. Containers and Packaging

WANL-TMI-1755 PC$4.00/MF$2.25
Westinghouse Electric Corp., Pittsburgh, Pa. Astronuclear Lab.
Tungsten Cups Carbiding Runs.
N. P. Spofford. 14 Feb 67, 2p

Descriptors: (*Containers, *Testing), Gas flow, Hydrogen, Metallurgy, Tungsten, Vapor deposited coatings, Very high temperature.

For abstract, see NSA 31 12, number 32975.

13E. Couplings, Fittings, Fasteners, and Joints

N75-21673/9GA PC$4.25/MF$2.25
National Aeronautics and Space Administration. Langley Research Center, Langley Station, Va.
Analysis of Bonded Joints.
S. Srinivas. Apr 75, 52p NASA-TN-D-7855, L-9563

Descriptors: *Adhesive bonding, *Lap joints, *Shear stress, *Stress-strain diagrams, Differential equations, Elastic properties, Peeling.

For abstract, see STAR 1313

13F. Ground Transportation Equipment

AD-A010 852/2GA PC$3.75/MF$2.25
Naval Postgraduate School Monterey Calif
Resource Management Policy for Non-Combat Vehicles for the Armed Forces of the Republic of China.
Master's thesis,
Kuan-Jen Chen. Mar 75, 41p

Descriptors: *Vehicles, *Military Forces(Foreign), *China, *Logistics planning, Management planning and control, Costs, Replacement, Logistics support, Theses.
Identifiers: Automotive industry, *Logistics management.

The Armed Forces of the Republic of China have a large number of motor vehicles for administrative use. The vehicles were acquired from different sources in different years. In general, the vehicles are old in age. The Armed Forces have established a plant to manufacture vehicles for replacement. Because the volume of production was low, the unit cost tended to be high. The private industry motor vehicles were also produced in an inefficient manner as compared to those produced in the United States. A logical alternative to reduce the cost is to combine the total demand and try to seek more efficient production. Unlike the private market, military vehicle replacement decisions are centralized. To help the decision maker to gain some insight on the optimal lifetime of a motor vehicle, a stochastic model is suggested in the paper.

NTIS/PS-75/490/3GA
PC$25.00/MF$25.00
National Technical Information Service, Springfield, Va.
Electric Automobiles (A Bibliography with Abstracts).
Rept. for 1964-Jun 75,
Audrey S. Hundemann. Jun 75, 85p*
Partial revision of COM-74-11573.

Descriptors: *Electric automobiles, *Bibliographies, Electric batteries, Storage batteries, Lead acid batteries, Nickel, Zinc, Design Tests, Performance evaluation, Cost estimates, Abstracts.
Identifiers: Lithium cells, Hybrid vehicular propulsion.

Abstracts pertaining to battery systems, costs, and evaluations of electric vehicles are presented. Included are studies on nickel-zinc and lead-acid batteries and various types of lithium cells. (Contains 80 abstracts).

NTIS/PS-75/533/0GA
PC$25.00/MF$25.00
National Technical Information Service, Springfield, Va.
Motor Vehicle Tires: Skid and Wear Resistance; Non-destructive Tests; Safety (A Bibliography with Abstracts).
Rept. for 1964-May 75,
Guy E. Habercom, and Gerald H. Adams. Jun 75, 144p*
Supersedes COM-74-11372.

Descriptors: *Bibliographies, *Automobile tires, *Skid resistance, *Wear resistance, Tire treads, Tire wear, Wear tests, Nondestructive tests, Safety, Abstracts.

Motor vehicle tires are evaluated for tread skid wear resistance in this bibliography of Federally-funded reseach reports. Nondestructive test methods for this evaluation are included as well as evaluating domestic and foreign vehicle tires for compliance with Federal Safety Standards. (Contains 139 abstracts).

PB-241 455/5GA PC$3.75/MF$2.25
Virginia Highway and Transportation Research Council, Charlottesville.
Evaluation of High Intensity Sheeting for Overhead Highway Signs.
Final rept.,
R. N. Robertson. Dec 74, 50p VHTRC-75-R24
Prepared in cooperation with Federal Highway Administration, Washington, D.C.

Descriptors: *Highway signs, *Reflectors, *Luminance, Evaluation, Field tests, Measurement, Visibility, Legibility, Brightness, Feasibility, Virginia.
Identifiers: *Overhead signs, High intensity sheeting, Reflective sheeting, Straight highways, Curved highways, DOT/4HZ/HA.

The current practice in Virginia is to reflectorize and illuminate all overhead signs because of their important role in the safe and orderly flow of traffic. The performance of high intensity sheeting has shown significant promise, and the purpose of this research was to determine the feasibility of using the material on overhead highway signs without external illumination. The brightness of six high intensity overhead signs without illumination was compared to that of six conventional illuminated signs. All experimentation was conducted in the field under the actual physical and environmental conditions experienced by the highway user. Luminance measurements were made with a telephotometer at the driver's eye position of eleven domestic automobiles. A total of 5,446 luminance measurements were recorded from the travel lanes of illuminated and non-illuminated roadways.

PB-241 730/1GA PC$5.25/MF$2.25
Federal Railroad Administration, Washington, D.C. Office of Research, Development and Demonstrations.
Proceedings of the Annual Railroad Engineering Conference (11th), Held at Southern Colorado State College, Pueblo, Colorado on October 23-24, 1974.
Apr 74, 118p FRA-ORD/D-75-73

Descriptors: *Rail transportation, *Transportation management, *Meetings, Freight cars, Hopper cars, Undercarriage, Railroad tracks, Diesel locomotives, Electric locomotives, Dynamic properties.
Identifiers: *Railroad engineering, DOT/4DZ/DC, DOT/2C.

The proceedings are a compilation of technical papers presented at the Conference held at Southern Colorado State College under sponsorship of the U.S. Department of Transportation/Federal Railroad Administration, October 23-24, 1974. Sessions at which papers were delivered covered 'Railway Freight Car Dynamics,' 'Track/Train Dynamics,' and 'New Developments.' The purpose of the Conference was: 'To provide a forum for parties interested in the promotion, well-being and progress of the free system of transport by rail to discuss the engineering aspects of railway freight equipment and its interface with the track structure....and thereby formulate answers to problems and develop advancements in the state of the art'.

PB-241 784/8GA PC$3.75/MF$2.25
Transportation Systems Center, Cambridge, Mass.
Modular Approach to Structural Simulation for Vehicle Crashworthiness Prediction.
Final rept. Jul-Oct 74,
Pin Tong, and J. N. Rossettos. Mar 75, 37p DOT-TSC-NHTSA-74-7 DOT-HS-801 475

Descriptors: *Automobiles, *Safety engineering, *Structural design, *Computerized simulation, Deformation, Collision research, Dynamic response, Mathematical models, Numerical integration.
Identifiers: *Crashworthiness, Finite element analysis.

A modular formulation for simulation of the structural deformation and deceleration of a vehicle for crashworthiness and collision compatibility is presented. This formulation includes three dimensional beam elements, various spring elements, rigid body elements, and modal elements.

PB-241 849/9GA PC$3.25/MF$2.25
Transit Development Corp., Washington, D.C.
Steel Wheel Plate Cracking.
Final rept.,
Mehmet Yontar. Jun 74, 10p TDC/500-74/4

Descriptors: *Rapid transit railways, *Vehicle wheels, *Cracking(Fracturing), Thermal stresses, Shot peening, Metallographic structures, Dynamic braking, Fatigue(Materials).

This document describes the results of an investigation into the cause of premature cracking on 28-inch reversed dish transit car wheels. Methods used in determining the operating thermal and track load stresses in the critical areas of a wheel are presented. The observations made on the cracked specimens all indicate that the cracks which formed were due to fatigue. The problem was resolved by specifying a new wheel plate thickness and also by machining and shot peening the plate surface.

PB-241 852/3GA PC$3.25/MF$2.25
Transit Development Corp., Washington, D.C.
Physics of Collisions.
Final rept.,
Donald Raskin. Oct 74, 13p TDC/500-74/6

Descriptors: *Railroad cars, *Collisions, Energy absorption, Kinetic energy, Velocity, Mass, Energy dissipation, Design.

Paper clears up some misconceptions on rail car structure and sets down the physical basis of collision analysis and car structure design.

PB-242 014/9GA PC$4.75/MF$2.25
Mitre Corp., McLean, Va.
Analysis and Simulation of Vehicle/Guideway Interactions with Application to a Tracked Air Cushion Vehicle.
Technical rept.,
R. J. Ravera, and J. R. Anderes. Feb 75, 96p MTR-6839 FRA/ORD/D-75-38
Contract DOT-FR-30015

Descriptors: *Tracked air cushion vehicles, *Mechanical guides, Interactions, Dynamic structural analysis, Loads(Forces), Suspension systems(Vehicles), Equations of motion, Computerized simulation.
Identifiers: DOT/4DZ/DC, DOT/4DZ/DE, *Guideways, *Ride quality.

Several analytical methods for investigating the problem of vehicle/guideway dynamic interactions are presented. These methods include several digital programs, each tailored to solve a particular aspect of the vehicle/guideway problem. Also included are computerized frequency domain methods for rapid estimation of system sensitivity to principal parameters and for use in selecting candidate guideway parameters. The major tool is the full scale vehicle/guideway dynamic interaction simulation, TRAVSIM, which includes coupled vehicle/guideway dynamics, independently generated guideway roughness profiles, and data processing for obtaining vehicle output data in the various ride quality formats.

WANL-TMI-1754 PC$4.00/MF$2.25
Westinghouse Electric Corp., Pittsburgh, Pa. Astronuclear Lab.
Support Washer Creep-Deformation Investigation.
N. P. Spofford. 13 Feb 67, 4p

Descriptors: (*Supports, *Creep), Compression, Materials testing, Medium temperature, Very high temperature.

For abstract, see NSA 31 12, number 32974.

13G. Hydraulic and Pneumatic Equipment

N75-21555/8GA PC$3.25/MF$2.25
Pennsylvania State Univ., University Park.
Research on Fluidics, Valves, and Proportional Amplifiers.
Oct 74, 12p NASA-CR-142645, RR-17
Contract NGL-39-009-023
Subm-Sponsored in Cooperation with the Harry Diamond Labs.

Descriptors: *Automatic control valves, *Fluidics, *Jet amplifiers, Flow characteristics, Jet flow, Laminar flow, Pressure distribution, Reynolds number, Velocity distribution.

For abstract, see STAR 1313

PAT-APPL-476 355/GA PC$3.25/MF$2.25
Department of the Navy Washington D C
A Bridge-Type Electrohydraulic Actuator.
Patent Application,
Raymond C. Dalton. Filed 5 Jun 74, 10p Rept no.
Government-owned invention available for licensing. Copy of application available NTIS.

Descriptors: *Electrohydraulic valves, *Actuators, Servomechanisms, Orifices, Fuel systems, Patents.
Identifiers: *Patent applications, PAT-CL-91-51.

The patent application relates to an electrohydraulic actuator including a bridge wherein each leg of the bridge comprises a series connected fixed orifice and a variable orifice joined at an hydraulic junction or bridge node. A doubly tapered rod passes through and controls the effective area of each variable orifice inversely with respect to the other. A bridge load is connected across the bridge nodes and controls an actuator load. The tapered rod is moved in accordance with a control signal applied to a positioning servomechanism.

13H. Industrial Processes

AD-A010 804/3GA PC$7.25/MF$2.25
Urs Research Co San Mateo Calif
Process Control Instrumentation: Vulnerability and Manufacturer/User Response to Nuclear Attack.
Final rept.,
William H. Van Horn, and O. Leon Crain. Feb 75, 212p Rept no. URS-7326-6
Contract DAHC20-73-C-0213

Descriptors: *Instrumentation, Processing, Control, Manufacturing, Vulnerability, Nuclear explosion damage, Industrial plants.
Identifiers: *Process control.

The report concerns process control instrument system (both pneumatic and electric) as used in a variety of critical industries (including basic chemicals manufacture, petroleum refineries, and electric power utilities) and the vulnerability of the manufacturing industry (SIC 3821) to nuclear attack and subsequent repair requirements associated with various damage levels. Interrelationships and trade-offs, possible between the users of instrumentation, instrumentation systems themselves, and the manufacturers, are explored. Options for alleviating such instrumentation shortages as may arise following nuclear attack are discussed.

AD-A011 021/3GA PC$3.75/MF$2.25
Wisconsin Univ Madison Mathematics Research Center
Identification of Multi-Input Multi-Output Transfer Function and Noise Model of a Blast Furnace from Closed Loop Data.
Technical summary rept.,
M. S. Phadke, and S. M. Wu. 11 Nov 74, 38p Rept no. MRC-TSR-1508
Contract DA-31-124-ARO(D)-462, Grant NSF-GP-40381

Descriptors: *Blast furnaces, *Automation, Industrial equipment, Closed loop systems, Cross correlation, Transfer functions, Time series analysis, Computer applications.
Identifiers: *Industrial processes.

A procedure for identification of multi-input multi-output transfer function and noise model from closed loop data is described and it is applied for the identification of a blast furnace.

AD-A011 038/7GA PC$3.75/MF$2.25
Naval Ship Research and Development Center Bethesda Md
Enhancement of Fatigue, Creep, and Stress-Corrosion Resistance by Surface Treatments.
Research and development rept.,
I. R. Kramer. Jun 75, 29p Rept no. NSRDC-4548

Descriptors: *Surface finishing, *Mechanical working, Steel, Titanium alloys, Aluminum alloys, Plastic deformation, Fatigue(Mechanics), Resistance, Creep, Stress corrosion, Corrosion resistance, Surface properties, Surfaces.

Identifiers: Steel 4130, Titanium alloy 6Al 4V, Aluminum alloy 7075.

By considering the nature of the surface layer formed as a result of plastic deformation, substantial improvements may be made in the fatigue, creep, and stress-corrosion cracking resistance. When the surface layer stress is decreased, the fatigue and stress-corrosion cracking resistance is increased. When its relaxation rate is decreased, the creep rate is also decreased.

NTIS/PS-75/480/4GA
PC$25.00/MF$25.00
National Technical Information Service, Springfield, Va.
Machine Automation and Numerical Control. Volume 1. 1964-1970 (A Bibliography with Abstracts).
Rept. for 1964-Dec 70,
Guy E. Habercom, Jr. Jun 75, 231p*
See also Volume 2, NTIS/PS-75/481.

Descriptors: *Bibliographies, *Machine tools, *Numerical control, Machine tool industry, Machine shop practice, Automation, Remote control, Punched tapes, Automatic control, Automatic control equipment, Production control, Abstracts.

Automation of machines and machine tools and numerical control methods are investigated in these Government-sponsored research reports. This report is Volume 1 of 3 volumes. (Contains 226 abstracts).

NTIS/PS-75/481/2GA
PC$25.00/MF$25.00
National Technical Information Service, Springfield, Va.
Machine Automation and Numerical Control. Volume 2. 1971-1973 (A Bibliography with Abstracts).
Rept. for Jan 71-Dec 73,
Guy E. Habercom, Jr. Jun 75, 171p*
See also Volume 1, NTIS/PS-75/480, and Volume 3, NTIS/PS-75/482.

Descriptors: *Bibliographies, *Machine tools, *Numerical control, Machine tool industry, Machine shop practice, Automation, Remote control, Punched tapes, Automatic control, Automatic control equipment, Production control, Abstracts.

Automation of machines and machine tools and numerical control methods are investigated in these Government-sponsored research reports. This report is Volume 2 of 3 volumes. (Contains 166 abstracts).

NTIS/PS-75/482/0GA
PC$25.00/MF$25.00
National Technical Information Service, Springfield, Va.
Machine Automation and Numerical Control. Volume 3. 1974-Jun 75 (A Bibliography with Abstracts).
Rept. for Jan 74-Jun 75,
Guy E. Habercom, Jr. Jun 75, 73p*
See also Volume 2, NTIS/PS-75/481.

Descriptors: *Bibliographies, *Machine tools, *Numerical control, Machine tool industry, Machine shop practice, Automation, Remote control, Punched tapes, Automatic control, Automatic control equipment, Production control, Abstracts.

Automation of machine and machine tools and numerical control methods are investigated in these Government-sponsored research reports. This report is Volume 3 of 3 volumes. (Contains 68 abstracts).

N75-21526/9GA PC$5.25/MF$2.25
Centre National de la Recherche Scientifique, Toulouse (France). Lab. d'Automatique et d'Analyse des Systemes.
Diffusion Oven Control: Modelization and Identification Contribution a l'Etude d'UN Four a Diffusion: Modelisation, Identification.
Ph.D. Thesis - Toulouse Univ.
L. H. Sarmientosuescun. 1973, 114p LAAS-PUBL-1082
Language in French.

Descriptors: *Command and control, *Ovens, *Temperature distribution, Algorithms, Computer programs, Data processing, Dynamic models, Nonlinear filters, Partial differential equations, Real time operation.

For abstract, see STAR 1313

N75-21527/7GA PC$5.25/MF$2.25
Centre National de la Recherche Scientifique, Toulouse (France). Lab. d'Automatique et d'Analyse des Systemes.
Numerical Command and Control for a Diffusion Oven Etude d'Une Commande Numerique d'UN Four a Diffusion.
Ph.D. Thesis - Toulouse Univ.
A. Bergeaud. 1974, 101p LAAS-PUBL-1194
Language in French.

Descriptors: *Command and control, *Numerical control, *Ovens, Dynamic models, Mathematical models, Nonlinear filters, Partial differential equations, Quadratic equations.

For abstract, see STAR 1313

PAT-APPL-555 750/GA PC$3.25/MF$2.25
National Aeronautics and Space Administration. Lyndon B. Johnson Space Center, Houston, Tex.
Thermal Insulation Attaching Means.
Patent Application.
L. Leger. Filed 5 Mar 75, 13p NASA-CASE-MSC-12619-1
Government-owned invention available for licensing. Copy of application available NTIS.

Descriptors: *Adhesive bonding, *Space shuttle orbiters, *Thermal insulation, *Thermal protection, Aerospace environments, *Patent applications.

An isolation arrangement is reported for attaching tiles of insulating material to the surface of a structure sought to be protected against extreme temperatures of the nature expected to be encountered by the space shuttle orbiter. The insulating tiles are each affixed to an isolation pad formed of closely arranted and randomly oriented fibers by means of a silicone resin adhesive. The pad, in turn, is affixed to the structure by a similar layer of silicone resin adhesive.

PAT-APPL-563 050/GA PC$3.25/MF$2.25
National Aeronautics and Space Administration. Pasadena Office, Calif.
Fabrication of Hollow Elastomeric Bodies.
Patent Application.
H. F. Broyles, J. Moacanin, and E. F. Cuddihy.
Filed 28 Mar 75, 14p NASA-CASE-NPO-13535-1
Contract NAS7-100
Government-owned invention available for licensing. Copy of application available NTIS.

Descriptors: *Cavities, *Elastomers, Cylindrical bodies, Fabrication, Flanges, Heart, *Patent applications, Artificial hearts.

Annular elastomeric bodies having intricate shapes are cast by dipping a heated, rotating mandrel into a solution of the elastomer. The elastomer is premitted to creep into sharp recesses, drying the coated mandrel and repeating the operation until the desired thickness was achieved. A bladder for a heart assist pump in which cylindrical body terminating in flat, sharp horizontal flanges was subjected to over 2,500 hours of simulated life conditions with no visible signs of degradation.

SAND-74-8651 PC$4.25/MF$2.25
Sandia Labs., Livermore, Calif.; California Univ., Davis.
Identification of the Initial-Stage Sintering Mechanism: A New Approach.
R. M. German, and Z. A. Munir. Dec 74, 25p CONF-750501-1
Contract AT(29-1)-789

Descriptors: (*Aluminium oxides, *Sintering), (*Silica gel, Sintering), (*Boron, Sintering), (*Copper, Sintering), Glass, Isothermal processes, Mass transfer, Nickel, Shrinkage, Surface properties, Titanium oxides.

For abstract, see NSA 31 12, number 33722.

TRG-Report-2642(S)
PC$4.00/MF$2.25
UKAEA Reactor Group, Springfields.
Alloy 800 Welding Experience at the Aea Springfields Laboratories.
A. F. Taylor. 2 Dec 74, 9p CONF-740988-2
U.S. Sales Only.

Descriptors: (*Incoloy 800, *Gas tungsten-arc welding), (*Inconel 82, Gas tungsten-arc welding), (*Stainless steel-316, Gas tungsten-arc welding), Automation, Chromium-molybdenum steels, Chromium-nickel steels, Sheets, Tubes, Welded joints.

For abstract, see NSA 31 12, number 33806.

13I. Machinery and Tools

JPRS-64910 PC$5.25/MF$2.25
Joint Publications Research Service, Arlington, Va.
Vibroacoustic Processes in Machines and Coupled Devices,
M. D. Genkin. 4 Jun 75, 103p
Trans. of mono. Vibroakusticheskie Protsessy v Mashinakh i Prisoedinennykh Konstruktsiyakh, Moscow, 1974, p33-36, 37, 48, 66-98, 107-135.

Descriptors: *Machines, *Vibration, Machinery noise, Transmission gears, Vibrational spectra, Test equipment, Translations, USSR.

The report contains an examination of the problems of vibrations in toothed transmissions and the distribution of the vibrations along the transmission components of the machine and mechanisms.

N75-21638/2GA PC$3.25/MF$2.25
Kanner (Lec) Associates, Redwood City, Calif.
Table of Contents and Abstracts of Mekhanika Mashin, No. 45, 1974.
I. I. Artobolevskiy. Mar 75, 11p NASA-TT-F-16178
Contract NASW-2481
Tran-Transl. Into English from the Book "Mekhanika Mashin, No. 45, 1974" Moscow, Nauka Press, 1974 p 144-147.

Descriptors: *Abstracts, *Gears, Bibliographies, Cutting, Gear teeth, Transmission.

For abstract, see STAR 1313

PAT-APPL-435 786/GA PC$3.25/MF$2.25
Department of the Navy Washington D C
Universal Shock and Vibration Mounts.
Patent Application,
James M. Nycum. Filed 23 Jan 74, 11p Rept no.

Government-owned invention available for licensing. Copy of application available NTIS.

Descriptors: *Electronic equipment, *Mountings, *Vibration isolators, Shock mitigation, Shock absorbers, Expanded plastics, Patents.
Identifiers: *Patent applications, PAT-CL-248-358.

The patent application relates to a universal mounting base for protecting fragile equipment against shock and vibration. A resilient plastic foam pad of rectangular outline is divided into quadrature air cavities and sandwiched between bottom and top plates. The top plate includes four matrices of holes, each matrix registering with a respective cavity, and being selectively blocked by cover pads interfaced between the top plate and the bottom of the equipment to be supported. Holes selected for blocking are empirically determined for a given weight and center of gravity of the equipment to achieve maximum dynamic stability and protection.

PAT-APPL-559 360/GA PC$3.25/MF$2.25
Department of the Navy Washington D C
Production of Beryllium Reinforced Composite Solid and Hollow Shafting.
Patent Application,
Richard Schmidt. Filed 17 Mar 75, 13p Rept no.

Government-owned invention available for licensing. Copy of application available NTIS.

Descriptors: *Shafts(Machine elements), *Composite materials, Patents, Aluminum, Titanium, Beryllium, Cladding, Mechanical working, Reinforcing materials, Matrix materials, Manufacturing.
Identifiers: *Beryllium reinforced composites, Aluminum matrix composites, Titanium matrix composites, Metal matrix composites, *Patent applications, PAT-CL-29-191.

The patent application describes a manufacturing process for a solid or hollow shaft consisting of aluminum or titanium with beryllium reinforcing therein. Beryllium rods are either clad with aluminum or titanium or, in the alternative, holes are drilled in an aluminum or titanium block which beryllium material is thereafter inserted into the holes. The preform with a hard steel central mandrel around which the beryllium rods are positioned is placed within a steel can and heated to a predetermined temperature. Pressure is then uniformly applied to outer circumference of the can to ensure uniform deformation of the beryllium reinforcement. The uniform exterior pressure on the outer surfaces of the beryllium rods and the interior pressure on these rods caused by the hard steel mandrel against the under surfaces of the rods as a result of a reduction process causes the beryllium rods to assume arcuate ribbon configuration. For hollow shafting, the mandrel at the center of the preform may later be removed.

WANL-TME-1730 PC$10.25/MF$2.25
Westinghouse Electric Corp., Pittsburgh, Pa. Astronuclear Lab.
Comparison of the Erosion Potential for a Potassium Vapor Turbine and a Cesium Vapor Turbine.
W. D. Pouchot. 9 Feb 68, 143p

Descriptors: (*Turbine blades, *Erosion), (*Potassium, *Corrosive effects), (*Cesium, Corrosive effects), Alloy-tzm, Analytical solution, Flow rate, Fluid flow, Moisture, Thermodynamic properties, Turbines, Udimet 700, Vapors.

For abstract, see NSA 31 12, number 33786.

13J. Marine Engineering

AD-A010 706/0GA PC$5.75/MF$2.25
Coast Guard Research and Development Center Groton Conn
Full Scale Icebreaking Tests of a Hull Air Coating System.
Final rept.,
J. A. McIntosh, and W. J. Blanton. May 74, 145p Rept no. CGR/DC-23/74 USCG-D-77-75

Descriptors: *Icebreakers, *Ship hulls, *Air bubbles, Air entrainment, Ice penetration, Air flow, Piping systems, Coast Guard ships.
Identifiers: DOT/4DZ/DD, DOT/4GZ/GA.

This report describes the full-scale testing of an auxiliary system for improving the icebreaking performance of ships. The system consisted of a set of blowers and piping installed within and on the hull in such a way that the exterior of the ships' hull was covered from bow to stern and keel to waterline, with a layer of air bubbles. The purpose of the air flow was to entrain a flow of water which, in turn, would continuously wet the area of contact between the hull and the ice during icebreaking operations. It was anticipated that this would reduce the friction between the ice and the hull, and thus increase the speed of advance of the ship.

AD-A010 810/0GA PC$3.75/MF$2.25
Gun Systems Engineering Center Louisville Ky
Investigation Into Anomalous Behavior of Gun Mount Gas Ejection Air Supply on Some DE 1052/1078 Class Vessels,
Mark J. Worst. Apr 75, 28p Rept no. GSEC-R-195

Descriptors: *Destroyer escorts, *Gun mounts, *Air pressure, Air supplies, Pressure measurement, Pressure regulators, Failure.
Identifiers: DE 1052 class vessels, DE 1078 class vessels, Pressure manifolds.

This report presents the results of a program conducted to identify, define, and correct a problem reported to be occuring in the fleet. The equipment investigated was the air pressure reducing manifold manufactured by the Grove Valve and Regulator Co. and installed on the ships of the DE 1052/1078 Class built by Avondale Shipyard.

AD-A010 822/5GA PC$4.25/MF$2.25
Naval Ship Research and Development Center Bethesda Md Ship Performance Dept
Cushion Pressure Properties of a High Length-To-Beam Ratio Surface Effect Ship,
David D. Moran. May 75, 51p Rept no. SPD-600-01

Descriptors: *Surface effect ships, *Cushioning, Air cushion vehicles, Air pressure, Pressure distribution, Pitch(Motion), Heaving, Harmonic analysis.
Identifiers: *Cushion pressure.

Air-cushion-supported vehicles are commonly assumed to be subject to a spatially uniform pressure distribution in the cushion region of the craft. The validity of this simplifying assumption is examined experimentally by measuring the spatial and temporal distribution of pressure in the cushion of a high length-to-beam ratio surface effect ship model free to heave and pitch in regular head waves. It is found that the pressure is not uniformly distributed in this model and the nonuniformity can lead to a heretofore unexamined mechanism for the generation of pitching motion in waves.

AD-A010 860/5GA PC$5.75/MF$2.25
Stevens Inst of Tech Hoboken N J Davidson Lab
The Applicability of the Functional Polynomial Input-Output Model to Ship Resistance in Waves.
Final rept. 1 Oct 73-31 Mar 75,
J. F. Dalzell. Jan 75, 142p Rept no. SIT-DL-75-1794
Contract N00014-67-A-0202-0045
See also report dated Dec 72, AD-757 363.

Descriptors: *Ship hulls, *Ocean waves, Spectrum analysis, Frequency response, Ship motion, Transfer functions, Mathematical models.

The objective of the present work was the same as that of its predecessor; that is, to demonstrate by analyses of experimental data that a postulated quadratic functional polynomial model is a reasonable representation of the added ship resistance produced by waves. In the course of the present work some improvements were made in the cross-bi-spectral analysis methods developed previously, three complete cross-bi-spectral analyses of experimental data were made, and it was shown that the mathematical model allows at least the very low frequency non-linear fluctuations of resistance to be synthesized in the time domain.

AD-A010 862/1GA PC$3.75/MF$2.25
Harvard Univ Cambridge Mass Div of Engineering and Applied Physics
Negative Chemotaxis: A New Approach to Marine Fouling Control.
Technical rept.,
Ralph Mitchell, Ilan Chet, and Phoebe Asketh. Apr 75, 27p Rept no. TR-1
Contract N00014-67-A-0298-0037

Descriptors: *Repellents, *Chemotaxis, *Antifouling coatings, *Bacteria, Benzoic acids, Fouling organisms, Transition metals, Tannic acid, Marine borers, Performance(Engineering), Algae.
Identifiers: Acrylamide.

A study of chemotaxis in marine bacteria showed that alteration in the chemical structure of attractants had a significant effect on the chemotactic response of the marine bacteria. A number of non-toxic organic compounds repelled bacteria responsible for primary film formation on marine surfaces. Tannic and benzoic acids and acrylamide were most effective. These repellents were applied to surfaces in non-toxic oil-based paint, both in laboratory and field studies. In both cases the repellents retarded the ecological succession leading to fouling of marine surfaces. Bacteria, algae and mollusks were inhibited in our initial studies. More extensive field studies at a number of locations are being initiated. This research indicates that non-toxic repellents have the potential to replace toxic metals as anti-fouling paints.

AD-A010 876/1GA PC$6.25/MF$2.25
Naval Postgraduate School Monterey Calif
The United States Shipbuilding Industry: Structure, Conduct, Performance.
Master's thesis,
John W. Ward, and Larkin E. Garcia. Mar 75, 165p

Descriptors: *Shipbuilding, *Economics, Industrial production, Procurement, Merchant vessels, Naval vessels, Management, Theses.

Structure, conduct and performance are important elements in the economic analysis of an industry. This thesis identifies and discusses the sub-elements of structure, conduct and performance of the U.S. shipbuilding and repair industry and how these sub-elements interact. A brief history of the industry to the Merchant Marine Act of 1970 is presented. Structure sub-elements are comprised of concentration, production methods, labor, governmental influences, barriers to entry, demand for U.S. Navy and merchant vessels and financing methods. Conduct sub-elements consist of public policies, labor utilization, financing behavior, claims, competition, research and development and conglomerate behavior.

AD-A011 089/0GA PC$3.75/MF$2.25
Pennsylvania State Univ University Park Applied Research Lab

Computerization of the Mean Streamline Blade Design Method.
Technical memo.,
Mark W. McBride. 21 Feb 73, 49p Rept no. TM-73-22
Contract N00017-70-C-1407

Descriptors: *Propellers(Marine), *Computer aided design, Turbomachinery, Rotor blades(Turbomachinery), Turbine stators, Streamline shape, Computer programs.
Identifiers: IBM 1130 computers.

The mean streamline method of propulsor blade section design has been adapted to the digital computer. Results agree well with cases previously calculated by hand. The computer solution is rapid and will allow the designer to better optimize his blade shapes. Blade rotation, pre-swirl and sections on conical surfaces are accounted for by the program. Digital output from the program can be applied directly to hardware fabrication procedures without the time consuming digitizing and smoothing previously required.

COM-75-10542/9GA PC$4.25/MF$2.25
Maritime Administration, Washington, D.C. Office of Ship Construction.
Tanker Ballasting - How Light Can You Go,
Alexander C. Lansburg, and John M. Cruikshank. 20 May 75, 71p MA-GEN-700-75061
Pub. in Paper presented to the Chesapeake Section of the Society of Naval Architects and Marine Engineers, Washington, D.C., 20 May 75.

Descriptors: *Tanker ships, *Water transportation, *Ballast, Ship weight, Displacement, Criteria, Motion, Fuel consumption, Economic gains, Mathematical models, Statistical analysis, Predictions, Maneuverability, Ballast tanks, Shipbuilding, Cargo transportation.
Identifiers: Seakeeping.

The report describes tanker ballasting practices and the possibilities for lower ballast operation. Current incentives investigated include the IMCO segregated ballast level construction requirement, the present high cost of fuel and better maneuverability. The constraints limiting light operation are also discussed.

COM-75-10640/1GA PC$7.25/MF$2.25
Massachusetts Inst. of Tech., Cambridge. Sea Grant Project Office.
Maritime Commerce and the Future of the Panama Canal,
Norman Judson Padelford, and Stephen R. Gibbs. 1975, 218p* MITSG-74-28 NOAA-75042203
Grant NOAA-NG-43-72
Index No. 74-328-Npt.

Descriptors: *Cargo movements, *Panama Canal, *Commercial transportation, Water traffic, Marine transportation, Transportation management, Canal locks, International relations, Treaties, Agreements, Taxes, Transportation planning.

This study closely examines the operations of the Panama Canal today. It examines trends in cargo movement, and in shipbuilding. Studied also are the limits of capacity of the Canal. The fundamentals of toll policy have been considered and a toll strategy for the future sought. Alternatives have been weighed for enlarging the Canal. The field of policy is examined, to consider steps to modernizing treaty relationships with the Republic of Panama, since the larger picture of engineering, technological change, economics, and decision-making are all tied in with effective handling of Canal questions in the years ahead. The work anticipates the area of change that lies ahead, and suggests that by capitalizing upon technological innovation the Canal can promote expanding markets and growing industry.

COM-75-10688/0GA PC$6.25/MF$2.25
Ocean Science and Engineering, Inc., Rockville, Md.
A Review of Oil Handling Problems at Offshore Terminals. Part II. Program for Experimentally Evaluating Advanced Oil Barriers,
I. Lewis Schneider, Richard C. Asher, and Charles R. Mainville. Aug 74, 171p MA-RD-900-75031, NMRC-272-23100-R1a
Contract MA-6562
See also Part 1 dated Nov 73, COM-74-10212.

Descriptors: *Water pollution, *Marine terminals, Barriers, Offshore structures, Terminal facilities, Tests, Oils.
Identifiers: *Oil pollution containment, *Deepwater ports, Offshore terminals.

This report presents the results of a study on the performance and operational requirements for an oil barrier to be used at several possible deep water port sites. Four types of barriers were investigated as follows: (1) pneumatic barrier, (2) skirt barrier, raisable, (3) skirt barrier, fixed flotation, and (4) skirt/pneumatic barrier (hybrid type). An engineering review of the four barrier designs is conducted and a program for their experimental evaluation is developed. The evaluation program provides for three levels of tests over a 3-year period: Containment/removal concept tests, dynamic model and component tests and offshore tests of a prototype barrier.

COM-75-10695/5GA PC$4.25/MF$2.25
Maritime Administration, Washington, D.C.
Preliminary Design Aid for Liquid Bulk Carriers,
Scott W. Dichter, and Alan H. Woodyard. 5 Nov 74, 56p MA-GEN-700-75062
Sponsored in part by Society of Naval Architects and Marine Engineers, New York. Presented at the Chesapeake Section of the Society of Naval Architects and Marine Engineers, Washington, D.C. 5 Nov 74.

Descriptors: *Tanker ships, *Computer aided design, Cost control, Weight control, Cargo, Ballast, Computer programming, Constraints.
Identifiers: *Liquid bulk carriers.

This paper presents a computer program defining the preliminary design characteristics of liquid bulk carriers. A speedy and efficient direct search routine determines a vessel with the lowest required freight rate for a user specified array of over 100 input variables. These input variables enable the user to tailor the output for specific needs. Modularity of program organization permits it to be easily modified to reflect a user specified design scheme. The design and cost routines represent the latest data available to MarAd.

JPRS-64809 PC$4.25/MF$2.25
Joint Publications Research Service, Arlington, Va.
Theory and Layout of Seagoing Commercial Fishing Vessels,
V. D. Kulagin. 20 May 75, 56p
Trans. of mono. Teoriya i Ustroistvo Morskikh Promyslovykh Sudov, Leningrad, 1974 p21-27, 274-320.

Descriptors: *Commercial fishing, *Merchant ships, *Ship hulls, Design, Ship structural components, Classifications, Bulkheads, Translations, USSR.
Identifiers: Fishing vessels.

The report contains a description of hull structures of commercial fishing vessels.

JPRS-64897 PC$7.50/MF$2.25
Joint Publications Research Service, Arlington, Va.
Propulsion Units for High-Speed Ships,
M. A. Mavlyudov. 3 Jun 75, 249p
Trans. of mono. Dvizhiteli Bystrokhodnykh Sudov, Leningrad, 1973 p1-239.

Descriptors: *Highspeed transport ships, *Marine surface propulsion, Hydrojet engines, Hydraulic jets, Hydrofoil craft, Hydrofoils, Translations, USSR.

The report contains an examination of the methods of designing propulsion unit for ships with hydrodynamic and aerodynamic support principles.

JPRS-64931 PC$7.50/MF$2.25
Joint Publications Research Service, Arlington, Va.
Vibroacoustic Diagnostics and the Reduction of the Vibration of Shipboard Machinery,
V. I. Popkov. 6 Jun 75, 238p
Trans. of mono. Vibroakusticheskaya Diagnostika i Snizhenie Vibroaktivnosti Sudovykh Mekhanizmov, Leningrad, 1974 p3-221.

Descriptors: *Ship structural components, *Machinery, *Vibration, Machinery noise, Vibrational spectra, Vibration isolators, Translations, USSR.

Contents:
- Vibration levels and the dynamic interaction of shipboard machinery with supporting and nonsupporting links;
- Vibrational energy flux to the supporting and nonsupporting links during operation of shipboard machinery;
- Methods and means of investigating the vibrations of shipboard machines;
- Vibrational diagnostics of machinery by the data on mechanical resistances, dynamic forces and emitted vibrational energy;
- Decreasing the vibrations in the structural elements of shipboard machinery.

NTIS/PS-75/510/8GA
PC$25.00/MF$25.00
National Technical Information Service, Springfield, Va.
Supertankers and Superports (A Bibliography with Abstracts).
Rept. for 1964-Jun 75,
Guy E. Habercom, Jr. Jun 75. 86p*
Supersedes NTIS/PS-74/088.

Descriptors: *Bibliographies, *Supertankers, *Deepwater ports, *Environmental impacts, Marine terminals, Seaports, Deepwater terminals, Tanker ships, Economics, Water pollution.
Identifiers: *Oil pollution.

Construction and operation of supertankers and the requirements for port facilities are reviewed in these Government-sponsored research reports. The environmental aspects are investigated.

13K. Pumps, Filters, Pipes, Fittings, Tubing and Valves

CEA-CONF-2957 PC$4.50/MF$2.25
CEA Centre d'Etudes Nucleaires de Saclay, 91 - Gif-sur-Yvette (France). Service Technique d'Etudes de Protection et de Pollution Atmospherique.
Use of Soda-Fluorescein Aerosol in the Testing of Air Filters.
J. Dupoux, and J. Pradel. 1974, 27p CONF-740996-1
In French and English. U.S. Sales Only.

Descriptors: (*Air filters, *Performance testing), Aerosols, Efficiency, Fluorescein, Sodium compounds.

For abstract, see NSA 31 12, number 32994.

N75-21562/4GA PC$3.75/MF$2.25
Alabama Univ., Huntsville. School of Graduate Studies and Research.
Working Model of the London Moment Readout System.
Semiannual Progress Report, 1 Jan. - 30 Jun. 1974.
J. B. Hendricks, and G. R. Karr. Mar 75, 38p
NASA-CR-120736
Contract NAS8-29316

Descriptors: *Information systems, *Liquid helium, *Plugs, *Superfluidity, *Two fluid models, Flow velocity, Mass flow rate, Thermal conductivity, Velocity distribution.

For abstract, see STAR 1313

PB-241 845/7GA PC$7.00/MF$2.25
AMF, Inc., Goleta, Calif. Advanced Systems Lab.
Study to Evaluate the Tools and Procedures for Assessing the Safety of Existing Gas Distribution Systems.
Final rept.,
John A. Bartol, and Ronald O. Nichols. Jan 75, 199p DOT/OPS-75/04
Contract DOT-OS-40182

Descriptors: *Gas distribution, *Piping systems, *Gas pipelines, Natural gas, Safety, Leakage, Inspection, Nondestructive tests, Cost effectiveness.
Identifiers: DOT/4CZ/CD.

The study aimed at finding how the safety of natural gas distribution systems is related to their physical condition. The physical methods and equipment presently being used by gas distribution system companies for this purpose were reviewed and evaluated, as well as statistical data on leaks and failures. A review was made of (a) nondestructive testing techniques that appear applicable to the problem, and (b) current research and development directed to distribution system evaluation. An assessment was made of relative cost effectiveness of the various techniques.

13L. Safety Engineering

AD-A010 972/8GA PC$3.25/MF$2.25
Rand Corp Santa Monica Calif
Introduction to a Method for the Allocation of Fire Companies,
Kenneth Lloyd Rider. Nov 74, 22p Rept no. P-5319

Descriptors: *Fire fighting, *Urban planning, Facilities, Site selection, Travel time, Fires, Frequency, Management information systems, Mathematical models, Decision making, Allocations.
Identifiers: Fire departments.

A decision must be made about where to locate a new fire house whenever an outmoded fire house is scheduled to be closed. Another major concern is the travel time to fires throughout the city. A problem arises if two regions of a city have widely differing rates of fire incidence. In practice, some compromise must be made between objectives in order to obtain a reasonable and useful allocation of fire companies. This paper presents a systematic method of making a compromise based on estimations of fire alarms, hazards, geography, and workload.

AD-A011 033/8GA PC$3.75/MF$2.25
Coast Guard Washington D C
Explosion and Fire on Board the Unmanned Tank Barge Ocean 80 at Carteret, New Jersey on 25 October 1972 without Loss of Life.
Marine Casualty rept.
2 May 75, 30p Rept no. USCG/NTSB-MAR-75-3

Descriptors: *Tankers, *Fires, Accidents, Gasoline, Fuel oil, Liquid level control, Cut off valves, Regulations, Safety, Coast Guard.
Identifiers: Carteret(New Jersey), Ocean 80 vessel, *Accident investigations.

On October 25, 1972, the tank barge OCEAN 80 was loading gasoline and fuel oil at the General American Transportation Corporation Terminal, Arthur Kill, Carteret, New Jersey. About 0600, a fire and several explosions occurred on the barge. Before the resultant fires were extinguished, the barge was destroyed and the terminal and nearby facilities were damaged substantially. The National Transportation Safety Board determines that the probable cause of the casualty was the ignition, by an unidentified source, of gasoline which spilled from overflowing cargo tanks on the OCEAN 80. A major contributing factor was the failure of the barge tankerman and the terminal dockman to adhere to prescribed cargo transfer procedures. The National Transportation Safety Board's recommendations listed in this report are addressed to the U.S. Coast Guard.

AD-A011 059/3GA PC$4.25/MF$2.25
Factory Mutual Research Corp Norwood Mass
Evaluation of Aqueous Film Forming Foam for Fire Protection in Aircraft Hangars.
Final rept. Jun 73-May 74,
David E. Breen, Lawrence M. Krasner, Bennie G. Vincent, and Peter J. Chicarello. Sep 74, 53p
Contract N00025-73-C-0031

Descriptors: *Fire protection, *Hangars, *Foam, Films, Air Force facilities, Fire extinguishing agents, Fire extinguishers, Nozzles.
Identifiers: JP-4 fuel.

Old style sprinkler deluge systems, discharging as much as 0.35 gal/min/sq ft of Aqueous Film Forming Foam (AFFF), have been found to be incapable of suppressing 900-sq ft JP-4 fires with 400-sq ft simulated wing obstructions rapidly enough to prevent structural damage to simulated aircraft in hangars. Two oscillating monitor nozzles, in combination with a 0.20 gal/min/sq ft water deluge system, were tested on 100-sq ft pan fires of JP-4 at 50 and 100 psi, using three different AFFF agents. The application rate was approximately 0.1 gal/min/sq ft. Both nozzles afforded equivalent performance. One of the three agents was found to require more than twice as much time to achieve control as the other two agents.

PB-241 574/3GA PC$3.75/MF$2.25
National Transportation Safety Board, Washington, D.C. Bureau of Surface Transportation Safety.
Series of Multivehicle Collisions and Fires Under Limited Visibility Conditions, New Jersey Turnpike, Gate 15 and U.S. Route 46, October 23-24, 1973.
Highway accident rept.
5 Mar 75, 47p NTSB-HAR-75-2, SS-H-33

Descriptors: *Motor vehicle accidents, *Accident investigations, Limited access highways, Collisions, Smoke, Fires, Garbage disposal, Fog, Visibility, Casualties, New Jersey.
Identifiers: DOT/5A, DOT/4DZ.

The report describes the situation that existed before, and during, the series of multivehicle collisions which occurred under fog and smoke conditions on a high-speed limited-access highway--the New Jersey Turnpike--during the late hours of October 23 and early morning of October 24, 1973. In that period, nine multivehicle collisions occurred, eight under limited-visibility conditions which were caused by smoke from burning material on an abandoned garbage dump in the Hackensack Meadowlands and fog. Sixty-six motor vehicles were involved, nine persons were killed, and 39 others were injured. The National Transportation Safety Board determines that the probable cause of this series of multivehicle collisions was the penetration of vehicles into areas of severely reduced visibility due to fog and smoke, the latter occasioned by fires adjacent to the turnpike which had not been promptly extinguished. The delay in closing the affected roadways by the New Jersey State Police contributed to the number of accidents.

PB-241 580/0GA PC$3.75/MF$2.25
National Transportation Safety Board, Washington, D.C. Bureau of Surface Transportation Safety.
Southern Pacific Transportation Co. Freight Train 2nd BSM 22 Munitions Explosion, Benson, Arizona May 24, 1973.
Railroad accident rept.
26 Feb 75, 41p NTSB-RAR-75-2, SS-R-24

Descriptors: *Railroads, *Accident investigations, Cargo transportation, Bombs, Fires, Explosions, Hazardous materials, Safety engineering.
Identifiers: *Railroad accidents, DOT/5A, DOT/2C.

On May 24, 1973, Southern Pacific Transportation Company's freight train 2nd BSM 22, was approaching Benson, Arizona, when 1 of 12 munitions boxcars in the train's consist caught fire. The boxcars were loaded with 500-lb. MK 82 bombs. As the train stopped, the cargo exploded, and the explosions continued for several hours. The National Transportation Safety Board determines that the probable cause of the accident was the exposure of heat-sensitive bombs in Car 38 to a fire inside the car. The fire most likely originated from sparks off the brakeshoes which ignited the sodium nitrate impregnated floorboards.

PB-241 639/4GA PC$4.25/MF$2.25
Ultrasystems, Inc., Phoenix, Ariz. Dynamic Science Div.
Development of a School Bus Fuel System Integrity Compliance Procedure.
Final rept.,
G. W. Morrow, and N. B. Johnson. Apr 75, 59p
Dynamic Science-2310-75-90 DOT-HS-801 529
Contract DOT-HS-4-00872

Descriptors: *Buses(Vehicles), *Fuel tanks, Crash tests, Performance evaluation, Safety engineering.
Identifiers: *School buses, FMVSS 301, DOT/4DZ/DG.

This report presents a program that derived a compliance test procedure for school buses with a gross vehicle weight of 10,000 pounds or greater. The objective of this program was to evaluate RMVSS 301 in relation to school buses, conduct a limited state-of-the-art survey and run full-scale dynamic tests to produce an effective procedure that will improve the crashworthiness of school bus fuel systems.

PB-241 749/1GA PC$3.75/MF$2.25
National Transportation Safety Board, Washington, D.C. Bureau of Surface Transportation Safety.
Jesus Ayala Schoolbus-Type Bus Run-Off Roadway/Drainage Ditch Submergence Blythe, California, January 15, 1974.
Highway accident rept.
5 Mar 75, 29p NTSB-HAR-75-1

Descriptors: *Motor vehicle accidents, *Accident investigations, Collision research, Human factors engineering, Motor vehicle operators, Buses(Vehicles), Casualties.
Identifiers: DOT/5A, DOT/4DZ.

The report describes and analyzes an accident involving a schoolbus-type bus which ran off the roadway while attempting to negotiate a

right angle turn and vaulted into a farm drainage ditch. The bus came to rest on its left side, partially submerged. Nineteen of the 47 occupants, including the driver, died in the accident. For each fatality, the cause of death was drowning. The National Transportation Safety Board determines that the probable cause of this accident was the failure of the driver to reduce the speed of the bus to that required to negotiate the turn, despite the presence of a turn warning/advisory speed sign. Contributing to this failure was a lack of driver alertness induced by fatigue.

PB-241 762/4GA PC$5.75/MF$2.25
Market Facts, Inc., Rockville, Md. Center for Quantitative Sciences.
A Survey to Determine Awareness, Attitudes, and Behavior Toward Safety of Outdoor Power Equipment.
Final rept.
4 Mar 75, 144p
Contract CPSC-C-74-184
Prepared in cooperation with Consumer Product Safety Commission, Washington, D.C.

Descriptors: *Electrical power equipment, *Safety, *Attitudes, Product safety, Accident prevention, Education, Handbooks, Classifications, Accidents, Injuries, Statistical data, Evaluation, Household characteristics, Structural design, Utilization, Hazards, Surveys, Behavior.
Identifiers: *Outdoor equipment.

Awareness, attitudes, and behavior towards the safety of outdoor power equipment was studied along with current safety education material, and its reception by the public. The book was intended for evaluating and designing safety educational material for outdoor power equipment. Information obtained also included: numbers and characteristics of users; age of equipment in use; kinds of equipment in use; accident rates, and injury information. Television and magazines were primary sources of safety information. Safety appears to be a large factor in owners' selection of equipment.

PB-241 843/2GA PC$4.25/MF$2.25
Michigan Univ., Ann Arbor. Highway Safety Research Inst.
Study on the Effects of the Energy Crisis and 55 MPH Speed Limit in Michigan.
Final rept.,
James O'Day, Daniel J. Minahan, and Dan Golomb. Apr 75, 61p UM-HSRI-SA-75-9
Prepared in cooperation with Michigan Office of Highway Safety Planning, Lansing.

Descriptors: *Motor vehicle accidents, *Energy crisis, *Vehicular movement control, Traffic safety, Accident prevention, Casualties, Accident investigations, Statistical data, Pedestrian movement, Michigan.
Identifiers: *Speed limits, DOT/5A, DOT/4EZ/EA.

The report is a presentation of the findings and conclusions derived from an analysis of Michigan traffic accident data and related data for the periods before, during, and after the peak energy crisis months of 1974. A major objective of this study was to identify the effect of the speed limits imposed as a result of the energy shortage. Some other causative factors relating to traffic crashes also were investigated. The report differs from others in that it seeks to define the cause-effect relationships specifically within Michigan, rather than nationally. Also by concentrating the study to a single state, it has been possible to get more consistent data across several measures--exposure, accident data, speed data--resulting in a more detailed analysis.

PB-241 850/7GA PC$3.25/MF$2.25
Transit Development Corp., Washington, D.C.
Smokeless Cable.
Final rept.,
John Mombach, and William M. Connell. Jun 74, 12p TDC/500-74/2

Descriptors: *Fire safety, *Electrical insulation, *Rapid transit railways, Electric wire, Power lines, Jackets, Fire hazards, Smoking, New York, Urban transportation.
Identifiers: New York City(New York).

The transit industry embarked upon a program to realistically and comprehensively develop an understanding of fire safety in the use of electrical wire and cable insulations and jacketing materials. The New York City Transit Authority has devoted extensive time and effort to identify the potential dangers. The fire safety problem concerned with excessive heat characteristics is described.

PB-241 851/5GA PC$3.25/MF$2.25
Transit Development Corp., Washington, D.C.
Transit Flammability Requirements.
Final rept.,
Eugene Schafran. Jun 74, 11p TDC/500-74/3

Descriptors: *Fire safety, *Flammability, *Furniture, Fire hazards, Specifications, Upholstery, Carpets, Fabrics, Plastics, Urban transportation, Mass transportation.

Control of the flammability characteristics of furnishings within a structure will reduce the fire hazard to the structure and enhance the life safety of its occupants. Flammability of materials should be considered along with comfort, cost and wear. Quantifying flammability, setting acceptable standards, identifying appropriate test procedures, and locating the material to satisfy the standards are steps taken by the Port Authority of New York and New Jersey.

PB-241 863/0GA PC$8.50/MF$2.25
Kentucky Univ., Lexington. Dept. of Civil Engineering.
Recreational Vehicle Accident Investigation Study.
Interim rept. 1 Jul 73-30 Jun 74,
John W. Hutchinson, R. Vince Sayre, and John A. Dearinger. Apr 75, 266p UK-766-Interim DOT-HS-801 523
Contract DOT-HS-201-3-766

Descriptors: *Motor vehicle accidents, *Recreation, *Accident investigations, Collision research, Human factors engineering, Recreational facilities, Safety engineering, Statistical data, Trailers, Mobile homes, Trucks.
Identifiers: DOT/5A, DOT/4DZ.

The scope of the study includes three primary levels of effort: Level I covers baseline data on drivers, vehicles and highways in the study area, the motor vehicle accident experience and recreational facilities in the study area, and the exposure and accident rates of recreational vehicles in the study area as compared to national baseline data. Level II consists of bi-level investigations by police/engineering personnel on a large sample of recreational vehicle accidents and Level III, in-depth investigation of fifty recreational vehicle accidents by a multidisciplinary team.

PB-241 988/5GA PC$3.75/MF$2.25
National Transportation Safety Board, Washington, D.C. Bureau of Surface Transportation Safety.
Pipeline Accident Report - Michigan-Wisconsin Pipe Line Company, Gas Transmission Line Failure, South of Monroe, Louisiana.
Pipeline accident rept. 2 Mar 74.
2 Apr 75, 27p NTSB-PAR-75-1

Descriptors: *Gas pipelines, *Accident investigations, Natural gas, Gas distribution, Failure, Weld defects, Covering, Forest fires, Soil pressure, Highways, Valves.
Identifiers: *Pipeline accident, DOT/5A, DOT/2D.

The report describes and analyzes a natural gas pipeline accident near Monroe, La., on March 2, 1974. A 30-inch pipeline failed at a girth weld inside a casing under a highway. A resulting fire burned 10 acres of forest, but no deaths or injuries resulted. The National Transportation Safety Board determines that the probable cause of the accident was the failure of a substandard girth weld due to repeated soil stresses. Contributing to the imposed stresses were the position of the pipe inside the casing and the heavy clay soil surrounding the pipe at each end of the casing. Recommendations are made to determine the effectiveness of using casing for pipelines beneath highways and railroads and to develop guidelines for the effective operation of automatic valves.

PB-241 989/3GA PC$3.75/MF$2.25
National Transportation Safety Board, Washington, D.C. Bureau of Surface Transportation Safety.
Highway Accident Report - George Wollman Meats, Inc., Truck/Auto/Greyhound Bus Collision and Fire, New Jersey Turnpike, Bordentown, New Jersey.
Highway accident rept. 19 Oct 73.
12 Mar 75, 31p NTSB-HAR-75-3

Descriptors: *Motor vehicle accidents, *Accident investigations, Semitrailers, Tractors, Buses(Vehicles), Passenger vehicles, Tires, Failure, Fires, Casualties, Limited access highways, New Jersey.
Identifiers: DOT/5A, DOT/4DZ.

A tractor-semitrailer was traveling south in the extreme right-hand lane of the New Jersey Turnpike at about 55 mph. A Greyhound bus and a private auto were traveling north on the Turnpike. The driver of the southbound truck stated that without any prior warning he heard a loud noise which sounded like a gunshot, the tractor immediately veered to the left and struck and crashed through the median guardrail into the northbound lanes. The truck struck the automobile and crushed it between the truck and bus. The truck ran off the northbound lanes and down a 50-foot embankment. The truckdriver was ejected. He was not wearing the available seatbelt. The automobile driver and his passenger, the busdriver, and six bus passengers, died in the crash. The truckdriver and 10 bus passengers were injured. The National Transportation Safety Board determines that the probable cause of the accident was the sudden deflation of the left front tire on the tractor which caused the driver to lose control of the vehicle.

PB-242 016/4GA PC$7.50/MF$2.25
Michigan Univ., Ann Arbor. Highway Safety Research Inst.
Multidisciplinary Accident Investigation Report Automation and Utilization, 1973.
Final rept. 1 Jan-31 Dec 73,
J. C. Marsh, IV. Apr 75, 238p UM-HSRI-SA-73-13 DOT-HS-801 535
Contract DOT-HS-031-3-589

Descriptors: *Motor vehicle accidents, *Accident investigations, *Data processing, Machine coding, Computer systems programs, Time sharing.
Identifiers: DOT/5A, DOT/4DZ.

The report contains a summary of contract accomplishments and a discussion of data preparation, data system and utilization of the data. Appendices include a list of all contract documentation, accident and injury causation coding systems and an index of all automated case reports. Over 6,000 clinical accident in-

vestigations have been conducted to-date (December 1973). These reports are being edited and processed into a common data base. All sponsors are also being provided direct access to the data base through the University of Michigan's time-shared computer system via remote batch and interactive terminals.

PB-242 065/1GA PC$3.25/MF$2.25
Texas Transportation Inst., College Station.
Vehicle Exteriors and Pedestrian Injury Prevention. Volume 1. Summary Report.
Final rept. Jul 71-Jul 73,
Hayes E. Ross, Jr., Ronald D. Young, Adil M. Mayyasi, and Thomas A. Krouskop. May 75, 23p RF-814-1-Vol-1 DOT-HS-801 541
Contract DOT-HS-065-1-217
See also PB-242 066. Prepared by Texas A and M Research Foundation, College Station.

Descriptors: *Pedestrian movement, *Motor vehicles, *Accident investigations, Injuries, Multivariate analysis, Automobile bodies, Design standards.
Identifiers: DOT/5A, DOT/4DZ/DB, *Vehicle exteriors, *Pedestrian injuries, *Injury severity index.

The objectives of the research were basically threefold: (1) To statistically analyze 263 pedestrian accident cases to search for injury causation factors; (2) To develop a method for quantifying the level of injury or severity a pedestrian accident victim sustains; and (3) To develop a mathematical model of the pedestrian accident victim, to validate the model through the use of a limited number of experimental tests, and to exercise the model to study the sensitivity of pedestrian accident severity to vehicle exterior design parameters.

PB-242 066/9GA PC$7.00/MF$2.25
Texas Transportation Inst., College Station.
Vehicle Exteriors and Pedestrian Injury Prevention, Volume II. Analysis of Accident Information.
Final rept. Jul 71-Aug 72,
Adil M. Mayyasi, and Udo W. Pooch. May 73, 189p RF-814-1-Vol-2 DOT-HS-801 542
Contract DOT-HS-065-1-217
See also PB-242 067. Prepared by Texas A and M Research Foundation, College Station.

Descriptors: *Pedestrian movement, *Motor vehicles, *Accident investigations, Injuries, Multivariate analysis.
Identifiers: *Injury severity index, *Vehicle exteriors, *Pedestrian injuries, DOT/5A, DOT/4DZ/DB.

Statistical analysis of 263 pedestrian accident records was conducted in search of injury causation factors. Multivariant analysis and item selection techniques were used to evaluate the data. Portions of this document are not fully legible.

PB-242 067/7GA PC$3.75/MF$2.25
Texas Transportation Inst., College Station.
Vehicle Exteriors and Pedestrian Injury Prevention. Volume III. The Texas A and M University Injury Severity Index.
Final rept. Jul 71-Aug 72,
Thomas A. Krouskop, Paul H. Newell, Jr., and Albert E. Swarts. May 75, 36p RF-814-1-Vol-3 DOT-HS-801 543
Contract DOT-HS-065-1-217
See also PB-242 068. Prepared by Texas A and M Research Foundation, College Station.

Descriptors: *Pedestrian movement, *Motor vehicles, *Accident investigations, Injuries, Kinematics, Simulation.
Identifiers: *Injury severity index, *Vehicle exteriors, *Pedestrian injuries, DOT/5A, DOT/4DZ/DB.

A method was developed to quantify the severity of injuries of pedestrian accidents as reported by medical practitioners. Also developed was a method to quantify the severity of pedestrian accidents, given the pedestrian's kinematics, as determined by numerical or physical simulation.

PB-242 068/5GA PC$9.50/MF$2.25
Texas Transportation Inst., College Station.
Vehicle Exteriors and Pedestrian Injury Prevention. Volume V-A 3-D. Math Simulation of a Crash Victim Extension and Validation Study.
Final rept. Jul 71-Jul 73,
Ronald D. Young, Wayne F. Lammert, and Hayes E. Ross, Jr. May 75, 342p RF-814-1-Vol-4 DOT-HS-801 547
Contract DOT-HS-065-1-217
See also PB-242 067. Prepared by Texas A and M Research Foundation, College Station.

Descriptors: *Pedestrian movement, *Motor vehicles, *Accident investigations, Injuries, Mathematical models, Impact tests, Computerized simulation, Anthropometry, Computer programs.
Identifiers: *Injury severity index, *Vehicle exteriors, *Pedestrian injuries, DOT/5A, DOT/4DZ/DB.

The volume describes various additions and extensions of an occupant model needed to simulate the pedestrian accident victim and the model's performance in simulating the drop tests of Volume IV. The modifications included changes to the victim-vehicle interaction subroutines, victim geometry, and vehicle geometry. Portions of this document are not fully legible.

PB-242 235/0GA PC$3.75/MF$2.25
Notre Dame Univ., Ind. Dept. of Aerospace and Mechanical Engineering.
Design, Construction and Evaluation of Small Scale Fire and Smoke Spread Facility at the University of Notre Dame.
Technical rept.,
John R. Lloyd, James V. Golden, and Paul K. Schroeder. Feb 74, 35p TR-37191-74-2 NSF/RA/E-74-066
Grant NSF-ATA73-07748-A01
Continuation of NSF-GI-37191.

Descriptors: *Fires, *Research projects, *Heat transfer, Test facilities, Smoke, Mathematical models, Model tests, Thermal radiation, Instruments, Turbulent flow, Wind tunnel models, Combustion control, Measurement.
Identifiers: *Fire research, Fire spread.

A small scale experimental facility to study fire and smoke spread models will be used to study and proposed valid analytical models of radiation, combustion and turbulence in corridor-type flows. The apparatus is basically a small wind tunnel capable of bulk fluid velocities of from 0-58 ft/sec. Gaseous fuel is injected through a porous plate which functions as part of wall (top, bottom, or side). It is variable in streamwise width and can be sized to approximate a line source of fuel. Probes are constructed to obtain velocity, temperature and species concentration profiles and the walls are instrumented to obtain axial wall temperature distributions.

PB-242 236/8GA PC$4.75/MF$2.25
Notre Dame Univ., Ind. Dept. of Aerospace and Mechanical Engineering.
Design, Construction, and Evaluation of a Small-Scale Fire Research Wind Tunnel,
James V. Golden, John R. Lloyd, and Jerome L. Novotny. Nov 74, 96p TR-37191-74-5 NSF/RA/E-74-067
Grant NSF-ATA73-07749-A01
Continuation of NSF-GI-37191.

Descriptors: *Fires, *Research projects, *Heat transfer, Test facilities, Wind tunnels, Evaluation, Models, Turbulent flow, Two dimensional flow, Combustion, Instruments, Probes, Velocity, Temperature measurement.
Identifiers: *Fire research, Velocity profiles.

A small scale fire research facility has been designed and constructed to provide apparatus with which data could be obtained for the proposal and evaluation of basic models of radiation, turbulence, and combustion processes in fire situations. The facility was designed to be as versatile as possible in order to permit the geometrical configuration to be modified with a minimum of difficulty. The basic apparatus was a wind tunnel constructed such that its aspect ratios could be varied. Velocity and temperature probes were constructed to provide the appropriate profiles at various locations in the tunnel test section. Mean velocity and temperature profiles were taken at various wind tunnel test section cross-sections to evaluate tunnel performance and operating characteristics.

PB-242 239/2GA PC$4.25/MF$2.25
Notre Dame Univ., Ind. Dept. of Aerospace and Mechanical Engineering.
Some Predictive Results Obtained from the Numerical Model for the Computation of Unsteady Recirculating Flows,
Michael L. Doria, and Tony C. Ku. Nov 74, 62p TR-37191-74-6 NSF/RA/E-74-068
Grant NSF-ATA73-07749-A01
Continuation of NSF-GI-37191.

Descriptors: *Fires, *Heat transfer, *Research projects, Convection, Circulation, Mathematical models, Numerical analysis, Turbulent flow, Fire tests, Fluid dynamics, Mathematical prediction, Computation, Unsteady flow.
Identifiers: *Fire research.

The report presents a compilation of results obtained from a numerical model for recirculating flows. This model was developed by the Notre Dame Fire Research Group. The computed results include such things as checks for internal consistency, runs in which computed results are compared with known results, and the establishment of benchmark cases. A series of runs has been carried out to study unsteady natural convection in an enclosure both with and without an exit window. Also included are series of runs employing simple turbulence models, a simple radiation model, and multiple species. In cases where comparisons can be made the computed results show excellent agremment with existing analytical or experimental results. In all other cases the computed results exhibit satisfactory physical trends.

PB-242 240/0GA PC$3.75/MF$2.25
Notre Dame Univ., Ind. Dept. of Aerospace and Mechanical Engineering.
A Numerical Model for the Prediction of Two Dimensional Unsteady Flows of Multicomponent Gases with Strong Buoyancy Effects and Recirculation,
Michael L. Doria. 12 Nov 74, 50p TR-37191-74-4 NSF/RA/E-74-064
Grant NSA-ATA73-07749-A01
Continuation of NSF-GI-37191.

Descriptors: *Fires, *Research projects, *Heat transfer, Mathematical models, Circulation, Mathematical prediction, Two dimensional flow, Numerical analysis, Equations of motion, Mixtures, Gas dynamics, Turbulence, Ventilation, Doors, Windows, Heat flux, Buoyancy, Unsteady flow.
Identifiers: *Fire research.

In this report a numerical model is developed for the prediction of two dimensional, unsteady, buoyancy driven flows with recirculation. The model makes use of the full elliptic equations

for mass, species, momentum and energy balance. The full equation of state for a mixture of perfect gases is incorporated. Thus density dependence on species concentration and temperature is allowed for. The model also allows for non-uniform transport properties, turbulence, and complex boundary conditions. The model is a valuable tool in the prediction of such effects as the motion of hot gases generated by a fire in a room or corridor; the ventilation of the fire through windows and doorways; the convective and radiative heat fluxes to the ceiling, floor, and side walls; and the rate of fuel consumption.

13M. Structural Engineering

CONF-750414-1 PC$4.50/MF$2.25
Blume (John A.) and Associates, Engineers, San Francisco, Calif.
Racking Tests of High-Rise Building Partitions,
S. A. Freeman. 1975, 29p

Descriptors: (*Buildings, *Stress analysis), Deformation, Design, Earthquakes, Engineering, Materials testing, Seismic effects, Shear properties, Testing.

For abstract, see NSA 31 12, number 35715.

JPRS-64787 PC$3.25/MF$2.25
Joint Publications Research Service, Arlington, Va.
Architecture Features of Volga Motor Vehicle Plant,
V. Blokhin. 19 May 75, 12p
Trans. of Arkhitektura SSSR, n4 p18-26 Apr 73.

Descriptors: *Industrial plants, *Automotive industry, *Architecture, Structural design, Construction, Buildings, USSR, Translations.

The report contains a description of the architecture features of the Volga Motor Vehicle Plant.

PB-241 741/8GA PC$3.25/MF$2.25
Virginia Polytechnic Inst. and State Univ., Blacksburg. Coll. of Engineering.
Relationship Between Finite Element and Measured Joint-Floor Connection Rigidities,
G. W. Swift, D. H. Pletta, and H. T. Hurst. May 75, 22p VPI-E-75-10
Contract HUD-H-2146

Descriptors: *Floors, *Joists, *Fasteners, Rigidity, Shear modulus, Shear tests, Nails(Fasteners), Glued joints.
Identifiers: Finite element analysis.

Shear tests were designed to measure the relative displacement between points on a specimen of a floor and joist system when an axial joist load was transmitted through connectors to the floor. Calculations show that the connector shear modulus can be computed upon the basis of a constant distribution of shear stress along the joint. Finite elements representing floor-joist connectors bridge the gap between the node points in the joists and those directly above them in the floor. The value of G to be used in the finite element model is related to the modulus determined by the shear test by the equation G = G'L/(t sub g) in which (t suh g) = Effective thickness of the connector assuming it to be a glue line, G' = Connector shear modulus, G = Shearing modulus of the material in the finite element model, and L = Length of the finite element model.

PB-241 944/8GA PC$8.75/MF$2.25
California Univ., Berkeley. Earthquake Engineering Research Center.
Earthquake Simulator Study of a Reinforced Concrete Frame,
P. Hidalgo, and R. W. Clough. Dec 74, 292p
EERC-74-13
Grant NSF-GI-36387

Descriptors: *Concrete structures, *Earthquakes, Earth movements, Seismic waves, Dynamic structural analysis, Vibration, Dynamic tests, Mathematical models.
Identifiers: *Earthquake engineering, *Ground motion.

This study presents the first test of a reinforced concrete structure conducted at the Earthquake Simulator Laboratory located at the University of California, Berkeley. A two story, one bay structure, representing the behavior of a typical small apartment or office building, was designed to meet the ductile concrete requirements of the 1970 Uniform Building Code and the ACI 318-71 Code. Using the 20 ft. square shaking table, it was subjected to a series of simulated earthquake ground motions with intensity large enough to cause significant inelastic deformations and change in the properties of the structure; the maximum base acceleration achieved was 0.46 g. The test structure was then repaired by injecting epoxy into the cracks and tested again with ground motions of equal or larger intensity than before. The structure was finally tested until failure using a static, horizontal load applied at the top floor.

PB-242 045/3GA Not available NTIS
Lehigh Univ., Bethlehem, Pa. Fritz Engineering Lab.
Proceedings of the International Conference on Planning and Design of Tall Buildings Held at Bethlehem, Pennsylvania on 21-26 August 1972. Volume 1a, Tall Building Systems and Concepts,
L. S. Beedle. Aug 72, 1210p Fritz Lab/369-73/5601
Grant NSF-GK-31499
Pub. as Joint Committee on Planning and Design of Tall Buildings Rept. no. 9. See also Volume C, PB-242 049 and Volume 1b, PB-242 046.
Paper copy available from American Society of Civil Engineers, 345 East 47th St., New York, N.Y. 10017. 5 volume set $50.00, individual volumes plus Volume C $20.00.

Descriptors: *Tall buildings, *Construction management, *Meetings, Skyscrapers, Steel construction, Concrete construction, Structural design, Structural engineering, Earthquake resistant structures, Blast resistant structures, Structural analysis, Substructures, Superstructures.

This volume contains the following themes: environmental systems, service systems, structural systems, construction systems, foundation design, architectural-structural interaction and discussions of these themes.

PB-242 046/1GA Not available NTIS
Lehigh Univ., Bethlehem, Pa. Fritz Engineering Lab.
Proceedings of the International Conference on Planning and Design of Tall Buildings Held at Bethlehem, Pennsylvania on 21-26 August 1972. Volume 1b, Tall Building Criteria and Loading,
L. S. Beedle. Aug 72, 1098p Fritz Lab/369-73/5604
Grant NSF-GK-31499
Pub. as Joint Committee on Planning and Design of Tall Buildings Rept. no. 9. See also Volume 1a, PB-242 045 and Volume 2, PB-242 047.
Paper copy available from American Society of Civil Engineers, 345 East 47th St., New York, N.Y. 10017. 5 volume set $50.00, individual volumes plus Volume C $20.00.

Descriptors: *Tall buildings, *Construction management, *Meetings, Skyscrapers, Steel construction, Concrete construction, Structural design, Structural engineering, Earthquake resistant structures, Blast resistant structures, Structural analysis, Substructures, Superstructures.

This volume contains papers on the following themes: gravity loads and temperature effects, earthquake loading and response, wind loading and wind effects, fire and blast, quality control criteria, structural safety and probabilistic methods, and discussions of these themes.

PB-242 047/9GA Not available NTIS
Lehigh Univ., Bethlehem, Pa. Fritz Engineering Lab.
Proceedings of the International Conference on Planning and Design of Tall Buildings Held at Bethlehem, Pennsylvania on 21-26 August 1972. Volume II. Structural Design of Tall Steel Buildings,
L. S. Beedle. Aug 72, 966p Fritz Lab/369-73/5602
Grant NSF-GK-31499
Pub. as Joint Committee on Planning and Design of Tall Buildings Rept. no. 9. See also Volume 1b, PB-242 046 and Volume 3, PB-242 048.
Paper copy available from American Society of Civil Engineers, 345 East 47th St., New York, N.Y. 10017. 5 volume set $50.00, individual volumes plus Volume C $20.00.

Descriptors: *Tall buildings, *Construction management, *Meetings, Skyscrapers, Steel construction, Concrete construction, Structural design, Structural engineering, Earthquake resistant structures, Blast resistant structures, Structural analysis, Substructures, Superstructures.

This volume contains papers on the following themes: commentary on structural standards, elastic analysis and design, plastic analysis and design, stability, design methods based on stiffness, fatigue and fracture, load factor (limit states) design, and discussions of these themes.

PB-242 048/7GA Not available NTIS
Lehigh Univ., Bethlehem, Pa. Fritz Engineering Lab.
Proceedings of the International Conference on Planning and Design of Tall Buildings Held at Bethlehem, Pennsylvania on 21-26 August 1972. Volume III. Structural Design of Tall Concrete and Masonry Buildings,
L. S. Beedle. Aug 72, 1159p Fritz Lab/369-73/5603
Grant NSF-GK-31499
Pub. as Joint Committee on Planning and Design of Tall Buildings Rept. no. 9. See also Volume 2, PB-242 047.
Paper copy available from American Society of Civil Engineers, 345 East 47th St., New York, N.Y. 10017. 5 volume set $50.00, individual volumes plus volume C $20.00.

Descriptors: *Tall buildings, *Construction management, *Meetings, Skyscrapers, Steel construction, Concrete construction, Structural design, Structural engineering, Earthquake resistant structures, Blast resistant structures, Structural analysis, Substructures, Superstructures.

This volume contains papers on the following themes: commentary on structural standards, elastic analysis--strength of members and connections, non-linear analysis and limit design, stability, stiffness and crack control, creep, shrinkage and temperature effects, limit states design, masonry structures, and discussions of these themes.

PB-242 049/5GA Not available NTIS
Lehigh Univ., Bethlehem, Pa. Fritz Engineering Lab.
Proceedings of the International Conference on Planning and Design of Tall Buildings Held at Bethlehem, Pennsylvania on 21-26 August 1972. Volume C. Introduction Conference Record Indexes,
L. S. Beedle. Aug 72, 764p Fritz Lab/369-73/5605
Grant NSF-GK-31499
Pub. as Joint Committee on Planning and Design of Tall Buildings Rept. no. 9. See also Volume 1a, PB-242 045.
Paper copy available from American Society of Civil Engineers, 345 East 47th St., New York, N.Y. 10017. 5 volume set $50.00, individual volumes plus Volume C $20.00.

Descriptors: *Tall buildings, *Construction management, *Meetings, Skyscrapers, Steel construction, Concrete construction, Structural design, Structural engineering, Earthquake resistant structures, Blast resistant structures, Structural analysis, Substructures, Superstructures.

This volume explains the function of the Joint Committee and presents an introduction to the Conference Proceedings. The volume also presents papers of the various advisory committees dealing with subjects in the fields of research, a survey on tall building characteristics, field observations, human response factors, various systems, and appendixes containing the Conference schedule, participants and addresses, units and conversion factors, abstracts of all the papers included in the Proceedings and an author and subject index.

PB-242 227/7GA PC$3.75/MF$2.25
American Society of Civil Engineers, New York.
Reports on the Development of a Program Plan for an Experimental R/D Incentives Program in the Construction Industry. Part I. Summary Report on Progress. Part II. Program Description.
Final rept.,
Donald C. Taylor. Jun 74, 38p NSF/RA/R-74/050
Grant NSF-DI-39521

Descriptors: *Construction industry, *Industrial research and development, *Project planning, *Incentives, Constraints, Barriers, Technology innovation, Objectives, Federal programs, Government policies, Cost sharing, Forecasting.
Identifiers: Progress reports.

This report summarizes the results of a study to determine barriers to and incentives for stimulating the support of research and innovation by the construction industry. Part 1 concerns objectives developed for a Federal cost-sharing incentive experiment, and how the program would plan to continue after termination of NSF funding. Interim findings, conclusions, and recommendations were developed which concerned organizational interest in the experiment; research and innovation within the construction industry; barrier indentification; and further funding plans, availability, and commitments. Part 2 contains a project description of the potential subject areas and specific experiments proposed.

WANL-TMI-1941 PC$4.00/MF$2.25
Westinghouse Electric Corp., Pittsburgh, Pa. Astronuclear Lab.
Pax Lateral Support Strap.
R. S. Anderson. 1 Oct 68, 6p

Descriptors: (*Supports, *Materials testing), Failures, Inspection, Tensile properties.

For abstract, see NSA 31 12, number 32977.

14. METHODS AND EQUIPMENT

14B. Laboratories, Test Facilities, and Test Equipment

AD-A010 716/9GA PC$4.75/MF$2.25
Sperry Rand Research Center Sudbury Mass
Time Domain Metrology Study.
Final technical rept. on Phase 1, Jun 71-Jun 72,
Harry M. Cronson, Peter G. Mitchell, and J. Lamar Allen. Aug 72, 84p Rept no. SRRC-CR-72-9
Contract DAAH01-71-C-1414
See also Phase 2, AD-A010 717.

Descriptors: *Metrology, *Calibration, *Time domain, Microwave frequency, Automatic, Pulse generators, Insertion loss, Ferrites, Attenuators, Errors, Standards, Microwave equipment, Ultrahigh frequency.
Identifiers: Nanoseconds.

The report describes work done during the second half of a 12 month investigation of the capabilities of time domain metrology in an automatic calibration system. Sources of measurement error are isolated and evaluated through experiments. The most serious source, long term random error due to slight generator instability, is reduced by a circuit modification. Sebsequent insertion loss measurements on wideband coaxial attenuators show excellent agreement between time domain results and frequency calibration values over the range 0.4 to 8 GHz. Measurement results are also included for waveguide components and crystal detectors. Pulse generator development work on higher voltage solid state diodes and optimum pulse width determination are discussed. Descriptions are given of a new pulse generator with 8 V amplitude and 60 ps, - 6 dB width, and a 2.5 ns time domain standard built for the U. S. Government. Recommendations for future work to improve and extend the frequency range of the present system are suggested.

AD-A010 717/7GA PC$5.25/MF$2.25
Sperry Research Center Sudbury Mass
Time Domain Metrology Study.
Final technical rept. on Phase 2, Jun 72-Jun 73,
Harry M. Cronson, A. Murray Nicolson, and Robert S. Smith. Aug 73, 103p Rept no. SCRC-CR-73-9
Contract DAAH01-71-C-1414
See also Phase 1, AD-A010 716, and Phase 3, AD-A010 718.

Descriptors: *Metrology, *Calibration, *Time domain, Automatic, Very high frequency, Pulse generators, Insertion loss, Instrumentation, Errors, Noise(Electrical and electromagnetic).

The objective was to examine the capability of time domain measurement techniques in an automatic calibration system with applications at lower frequencies than in Phase 1, viz VHF frequency ranges and below. In earlier work, methods for calibrating passive microwave components over a broad microwave frequency range (0.4 to 10 GHz) were discussed. A subnanosecond risetime pulse generator was used to excite the approximate impulse or step response of the network; the response was measured using a very broadband (dc - 18 GHz) sampling oscilloscope coupled to a laboratory instrumentation computer; fast Fourier transforms were then performed on the digitized responses to translate from time-to-frequency domains, yielding the network transfer function from a single waveform measurement. Insertion loss measurements on wideband coaxial attenuators showed excellent agreement between time domain results and frequency calibration values over the range 0.4 to 8 GHz.

AD-A010 718/5GA PC$4.75/MF$2.25
Sperry Research Center Sudbury Mass
Time Domain Metrology Study.
Final technical rept. on Phase 3, Feb 73-Dec 73,
Harry M. Cronson, Peter G. Mitchell, J. Lamar Allen, Harry Strenglein, and Richard L. Earle.
Jan 74, 80p Rept no. SCRC-CR-74-1
Contract DAAH01-71-C1414
See also Phase 2, Ad-A010 717.

Descriptors: *Metrology, *Calibration, *Time domain, Microwave frequency, Automatic, Pulse generators, Waveguide couplers, Harmonic generators, Radiofrequency generators, Microwave equipment.

The report describes work done on extending the upper frequency limit of accurate time domain measurements beyond 10 GHz. The main emphasis was on developing suitable equipment and performing measurements on passive microwave components between 10 and 18 GHz. A secondary task involved simultaneous measurements of S sub 11 and S sub 21 parameters in the 0.4 to 18 GHz frequency range. Various techniques to produce rf pulses less than 500 ps wide were considered. The approach selected was based on harmonic generator techniques and provided a 3 V peak-to-peak pulse with appreciable spectral amplitude in the 9 to 18 GHz frequency range. An rf pulse generator incorporating this principle was build for the U. S. Army. Procedures and results of S sub 21 measurements above 10 GHz and S sub 11, S sub 21 measurements between 0.4 to 10 GHz are reported.

AD-A010 751/6GA PC$3.25/MF$2.25
Coastal Engineering Research Center Fort Belvoir Va
Lab Profile and Reflection Changes for H sub o/L sub o = 0.02,
Charles B. Chesnutt, and Cyril J. Galvin, Jr.
1974, 22p Rept no. CERC-Reprint-11-74
Availability: Pub. in Proceedings of the Coastal Engineering Conference (14th), Copenhagen (Denmark), Jun 74, ch55 p958-977.

Descriptors: *Water tanks, *Model basins, *Water waves, Waveform generators, Profiles, Reflection, Height, Waveforms, Coastal regions, Reprints.
Identifiers: Wave height.

Reflection coefficients and profile changes were measured during four lengthy experiments in two relatively long, narrow wave tanks. Each tank had a periodic wave generator at one end and a 0.2 mm movable sand bed at the other end. Generator period (1.90 sec), water depth (2.33 ft), nominal wave height before reflection (0.36 ft), and initial sand slope (1:10) were constant in the four experiments.

AD-A010 785/4GA PC$10.00/MF$2.25
National Aeronautics and Space Administration Greenbelt Md Goddard Space Flight Center
Proceedings of the Annual NASA and Department of Defense Precise Time and Time Interval (PTTI) Planning Meeting (4th), Held at Goddard Space Flight Center on 14-16 November 1972,
H. N. Acrivos, and Clark Wardrip. 1972, 369p
Rept no. NASA-X-814-73-72
See also report dated 1972, AD-A010 786, and report dated 1973, AD-758 739. Prepared in cooperation with the Naval Observatory, Washington, D.C.

Descriptors: *Time signals, *Frequency standards, *Meetings, Time standards, Timing devices, Time, Atomic clocks, Navigational aids, Radio transmission, Very low frequency, Ultrahigh frequency, Extremely low frequency, Communication and radio systems, Interferometry, Intervals.
Identifiers: PTTI(Precise Time and Time Interval), Precise time and time interval.

Contents:
Satellite timing techniques, precision frequency sources, and VLBI applications;
Frequency stabilities and communications;
VLF-UHF, propagation and use.

AD-A010 786/2GA PC$5.75/MF$2.25
National Aeronautics and Space Administration Greenbelt Md Goddard Space Flight Center
Proceedings of the Annual NASA and Department of Defense Precise Time and Time Interval (PTTI) Planning Meeting (5th), Held at Goddard Space Flight Center on 14-16 November 1972,
H. N. Acrivos, and Clark Wardrip. 1972, 575p
Rept no. NASA-X-814-74-225
See also report dated 1972, AD-A010 785, and report dated 1973, AD-758 739. Prepared in cooperation with the Naval Observatory, Washington, D.C.

Descriptors: *Time signals, *Frequency standards, *Meetings, Time standards, Time, Intervals, Atomic clocks, Navigational aids, Timing devices, Interferometry, Communication and radio systems, Synchronization(Electronics), Synchronism, Calibration.
Identifiers: PTTI(Precise Time and Time Interval), Precise time and time interval.

Topics include: PTTI requirements, applications, and systems; time dissemination; clock calibration; precision frequency sources; VLF transmissions for time synchronization; and PTTI requirements for communications.

AD-A010 910/8GA PC$4.75/MF$2.25
Illinois Univ Urbana Dept of Computer Science
Molecular Stochastics: A Study of Direct Production of Stochastic Sequences from Transducers.
Doctoral thesis,
James Roland Cutler. Apr 75, 88p Rept no. UIUCDCS-R-75-723
Contract N00014-67-A-0305-0024

Descriptors: *Stochastic processes, *Transducers, *Measuring instruments, Measurement, Noise, Temperature, Luminescence, Flow, Theses.
Identifiers: Molecular stochastics.

Molecular Stochastics is an extension of stochastic computing. The main concern of Molecular Stochastics is the generation of stochastic sequences that are used as the encoded information in stochastic computing. Also, these stochastic sequences in order to have meaning should be dependent upon some physical parameter of interest such as temperature. Thus, the problem is constructing a transducer which outputs a stochastic sequence that varies with respect to a physical parameter. The paper presents the necessary theory along with a discussion of a number of noise sources. These sections imply a number of transducers which were constructed and tested. The data was then compared with the result predicted by the theory.

AD-A010 911/6GA PC$5.75/MF$2.25
Tennessee Univ Knoxville Dept of Electrical Engineering
Development of a Nonpenetrating Inductance Probe for Measuring Lubricating Film Thickness in a Dynamic Seal.
Doctoral thesis,
William Ross Duncan. Dec 74, 149p Rept no. ME-74-T57-20
Contract N00014-68-A-0144

Descriptors: *Probes, Seals(Stoppers), Measurement, Films, Lubricants, Thickness, Inductance, Computer programs, FORTRAN, Theses.
Identifiers: FORTRAN 4 programming language.

A report is made on the development of a nonpenetrating inductance type proximity probe. The probe was designed to measure the film thickness between the faces of a dynamic seal. The inductance probe design equations, along with computer programs to solve them, are presented. The inductance probe was designed to measure the distance between the faces of a dynamic seal without penetrating the face of the seal. The programs that are presented may be modified slightly and applied to many different situations.

AD-A011 025/4GA PC$3.25/MF$2.25
Royal Aircraft Establishment Farnborough (England)
An Instrument for the Rapid Removal of DC Levels with Minimum AC Attenuation of Very Low Frequencies.
Technical rept.,
G. R. Sutton, and R. H. Stanford. Jan 75, 17p
Rept no. RAE-TR-75005 DRIC-BR-46323

Descriptors: *Measuring instruments, Circuits, Amplifiers, Automatic, Setting(Adjusting), Timing circuits, Great Britain.

An ac amplifier with automatic adjustment of the input time constant to suit the signal frequency was developed. A dc component is removed from the ac signal within four cycles and the ac component attenuated by less than 25% over the design frequency range of 0.1 to 5 Hz.

AD-A011 042/9GA PC$4.75/MF$2.25
Naval Ship Research and Development Center Bethesda Md
Determining the Concentration of Oil in Water Samples by Infrared Spectrophotometry. Phase II. Interlaboratory Study. Volume II.
Evaluation rept.,
Stanley Finger, Harry Feingold, Ed Timko, and Sidney Orbach. Jan 75, 100p Rept no. NSRDC-4536-Vol-2
See also Volume 1 dated Jan 75, AD-A011 041, and Volume 3 dated Jan 75, AD-A011 043.

Descriptors: *Statistical analysis, Experimental data, Calibration, Chemical analysis, Data processing, Performance(Engineering), Sea water, Errors, Corrections, Oils.
Identifiers: *Interlaboratory tests, *Oil pollution detection, *Water analysis, Performance evaluation.

An interlaboratory study to validate a method for measuring the concentration of oil in water was conducted with the active participation of seven laboratories. This volume (Volume II) contains discussions and derivations of some of the procedures in the statistical analysis used in this study, results at a greater level of detail, and results based on the inclusion of sample aging as well as calibration corrections. The effect of these two corrections were studied by generating two additional sets of modified data which incorporate the corrections and repeating many of the analyses performed with the original data set. The calibration correction is based on fitting an inverse linear least squares regression line to the calibration data and generating a revised second set of laboratory reported concentrations using this calibration curve. The aging corrections are based on the results of the Sample Aging Study in Phase I of this effort.

AD-A011 043/7GA PC$7.00/MF$2.25
Naval Ship Research and Development Center Bethesda Md
Determining the Concentration of Oil in Water Samples by Infrared Spectrophotometry. Phase II. Interlaboratory Study. Volume III.
Evaluation rept.,
Stanley Finger, Harry Feingold, Ed Timko, and Sidney Orbach. Jan 75, 176p Rept no. NSRDC-4536-Vol-3
See also Volume 2 dated Jan 75, AD-A011 042.

Descriptors: *Experimental data, Water, Chemical analysis, Oils.
Identifiers: *Water analysis, *Oil pollution detection, *Interlaboratory tests.

An interlaboratory study to validate a method for measuring the concentration of oil in water was conducted with the active participation of seven laboratories. This volume contains appendices presenting a description of samples shipped to laboratories participating in the interlaboratory study of the IR Oil Concentration Analysis Method, and data provided by laboratories participating in the interlaboratory study of the IR Oil Concentration Analysis Method.

AD-A011 062/7GA PC$3.25/MF$2.25
Texas Univ At Austin Electronics Research Center
Thin-Film Temperature Sensors for Biological Measurements,
Clarence P. Cain, and Ashley J. Welch. 13 Apr 75, 4p AFOSR-TR-75-0721
Contract F44620-71-C-0091
Availability: Pub. in IEEE Transactions on Biomedical Engineering, vBME-21 n5 p421-423 Sep 74.

Descriptors: *Temperature measuring instruments, *Thermocouples, *Tissues(Biology), *Thin films, Biology, Copper, Nickel, Metal films, Reprints.

Dynamic as well as static temperature measurements are now possible in biological tissue using thin-film Cu-Ni microthermocouples. These probes which use a quartz substrate exhibit response times of less than a millisecond with thermal properties similar to tissue. Their thermoelectric EMF of 21 micrometers Vol/degrees C is linearly dependent on temperature over the range normally encountered in biological measurements. Probe-tip diameters as small as 10 micrometers are being fabricated. (Author)

AD-A011 092/4GA PC$3.75/MF$2.25
Pennsylvania State Univ University Park Applied Research Lab
Backscattering and Diffraction from Bare and Lined Wedges - Theory and Experiments.
Technical memo.,
Alan D. Stuart, and Susan M. Cohick. 25 Feb 74, 46p Rept no. TM-74-39
Contract N00017-73-C-1418

Descriptors: *Steel, *Ultrasonic tests, Wedges, Acoustic scattering, Backscattering, Diffraction, Linings, Rubber, Mathematical analysis.

This report documents an experimental program to determine the ability of existing theoretical formulations to predict the acoustic diffraction field from submerged wedges. Both backscatter and diffraction measurements were conducted on two wedges measuring 75 and 90 degrees. Tests were conducted on the bare steel wedges and on the wedges lined with a pressure release rubber. The experimental results were compared to the fiber order approximation of the diffraction field from rigid and pressure release wedges. The experimental values for the bare steel and rubber lined wedges agree to within experimental error. This combined value agrees more closely with the pressure release wedge theory than with the rigid wedge theory.

COM-75-10613/8GA PC$4.75/MF$2.25
National Bureau of Standards, Washington, D.C. Electricity Div.
Critical Electrical Measurement Needs and Standards for Modern Electronic Instrumentation. Report of a Workshop Sponsored by the National Bureau of Standards, Held in

Gaithersburg, Maryland, on September 23-24, 1974.
Technical note,
Peter Richman. May 75, 77p NBS-TN-865
Library of Congress Catalog Card no. 75-600022. Paper copy also available from GPO as C13.46:865.

Descriptors: *Instruments, *Electrical measurement, Standards, Electronic equipment, Requirements, Meetings, Signal processing.
Identifiers: Time domain, Data conversion.

The basic idea of the Workshop was to bring together a broadly representative group of some twenty-five leading manufacturers and prime users, working in a free and open atmosphere, in order to have them delineate the present and future critical support needs in the field of dynamic electrical measurements for modern electronic instrumentation, with emphasis on physical standards, standardized measurement methods, new calibration and measurement assurance services, relevant data, and most important, new measurement methodologies.

COM-75-10631/0GA PC$7.50/MF$2.25
National Bureau of Standards, Washington, D.C.
The International Bureau of Weights and Measures 1875-1975.
Special pub. (Final),
Chester H. Page, and Paul Vigoureux. May 75, 250p* NBS-SP-420
Prepared in cooperation with National Physical Lab., Teddington (England). Paper copy also available from GPO as C13.10:420.

Descriptors: *Metrology, *Units of measurements, History, Reviews.
Identifiers: International System of Units.

This is the English version of the Centennial volume of the International Bureau of Weights and Measures (BIPM) translated from the French. Metrology - the science of measurement - is traced from man's earlier efforts to the world's most modern, uniform, and coherent measurement system, the International System of Units (SI). Detailed accounts are given of the 1875 Treaty of the Metre - to which 18 nations, including the United States, were signators - and the work of the International Bureau of Weights and Measures which was created by the Treaty and now the international province of 44 nations. Historical reviews are given of the development of the base and derived units of the SI, specifically mass, length, gravimetry, manobarometry, thermometry, electricity, photometry, radioactivity, X and gamma rays, and neutron measurements.

COM-75-50336/7GA Not available NTIS
National Bureau of Standards, Washington, D.C.
Radiometry in the EUV Spectral Region: Standard Source and Detectors.
Final rept.,
E. B. Saloman, D. L. Ederer, and R. P. Madden. 1974, 3p
Pub. in Proceedings of International Conference on VUV Radiation Physics (4th), Hamburg, 17-26 Jul 74, ch4 p798-800 1974.

Descriptors: *Synchrotron radiation, *Radiometry, *Standards, *Far ultraviolet radiation, Calibration, Far ultraviolet radiation, Spectrometers, Monochromators.
Identifiers: Reprints.

Conceptually it is straight-forward to apply the calculable continuum distribution of synchrotron radiation to problems requiring a source of known irradiance. However, in practice many factors affect the accuracy of such a calibration. These factors will be discussed with reference to the NBS 170 MeV synchrotron. The calibration facility at NBS-SURF has been used in the 200A-1200A spectral range to calibrate rocket monochromators. Transfer radiometric standards consisting of windowless diodes with cathodes made of anodized aluminum oxide on aluminum have been developed and calibrated for wavelengths between 200A-600A. Diodes have been calibrated with a double ionization chamber using synchrotron radiation from NBS-SURF as a source. Methods accounting for beam motion, second order radiation in the beam, as well as multiple ionization in the double ionization chamber will be discussed.

N75-21587/1GA PC$3.25/MF$2.25
Research Triangle Inst., Research Triangle Park, N.C.
Study to Define Low Voltage and Low Temperature Operating Limits of the Pioneer 10/11 Meteoroid Detection Equipment (Mde) System.
Final Report.
C. D. Parker. Feb 75, 24p NASA-CR-132635
Contract NAS1-13137

Descriptors: *Low temperature tests, *Low voltage, *Meteoroids, *Pioneer 10 space probe, *Pioneer 11 space probe, Failure analysis, Liquid helium, Liquid nitrogen, Vapor pressure.

For abstract, see STAR 1313

N75-21588/9GA PC$4.25/MF$2.25
Ionics Research, Inc., Houston, Tex.
Flight Contaminant Trace Analyser. Phase 1: Chromatographic Input System.
Final Report.
Apr 75, 73p NASA-CR-141733
Contract NAS9-14001

Descriptors: *Gas chromatography, *Spacecraft contamination, *Trace contaminants, Chemical analysis, Environmental control, Mass spectroscopy, Spacecraft cabin atmospheres, Spacecraft environments.

For abstract, see STAR 1313

N75-21589/7GA PC$4.25/MF$2.25
Martin Marietta Corp., Baltimore, Md.
Skylab Program: Earth Resources Experiment Package. Sensor Performance Evaluation. Volume 6: (S194) L-Band Radiometer.
Final Report.
G. P. Kenney. 7 Apr 75, 57p NASA-CR-141752, MSC-05546-VOL-6
Contract NAS8-24000

Descriptors: *Erep, *Radiometers, *Remote sensors, *Skylab 1, *Ultrahigh frequencies, Calibrating, Error analysis, Flight characteristics, Performance tests, Preflight analysis.

For abstract, see STAR 1313

N75-21596/2GA PC$5.25/MF$2.25
Pisa Univ. (Italy).
Acceleration Graph with Digital Magnetic Registration of Three Channels Accelerografo Con Registrazione Magnetica Digitale a Tre Canali.
P. Maestrini, and G. Rossi. 1973, 112p RL-148(73)
Language in Italian.

Descriptors: *Accelerometers, *Digital data, *Seismographs, Circuit diagrams, Data recorders, Magnetic tapes, Specifications, Tape recorders.

For abstract, see STAR 1313

N75-21597/0GA PC$3.25/MF$2.25
National Aeronautics and Space Administration. Goddard Space Flight Center, Greenbelt, Md.
A Composition Analyzer for Microparticles Using a Spark Ion Source.
S. Auer, and O. E. Berg. Mar 75, 25p NASA-TM-X-70874, X-670-75-87
Subm-Submitted for Publication.

Descriptors: *Electric sparks, *Ion currents, *Microparticles, *Time of flight spectrometers, Analyzers, Chemical composition, Ion production rates, Ion sources, Mass spectra.

For abstract, see STAR 1313

N75-21599/6GA PC$7.25/MF$2.25
Honeywell, Inc., Lexington, Mass. Radiation Center.
Limb Radiance Inversion Radiometer.
Final Report.
R. W. Drozewski, J. C. Gille, J. R. Thomas, K. J. Twohig, and R. R. Boyle. Jan 75, 218p NASA-CR-143712
Contract NAS5-21652

Descriptors: *Nimbus 6 satellite, *Radiometers, *Systems engineering, Performance prediction, Tables (Data).

For abstract, see STAR 1313

N75-21603/6GA PC$3.75/MF$2.25
Royal Greenwich Observatory, Herstmonceux (England).
Greenwich Time Report Royal Greenwich Observatory Time and Latitude Service, January - June 1974.
Jun 74, 37p

Descriptors: *Latitude measurement, *Tables (Data), *Time signals, Annual variations, Universal time.

For abstract, see STAR 1313

N75-22107/7GA PC$4.25/MF$2.25
Istituto Superiore di Sanita, Rome (Italy). Lab. di Fisica.
High-Energy BEAMS and Magnetic Spectrometers, Part 1 Fasci di Alta Energia E Metodi Analisi Magnetica, Parte 1.
G. Matthiae. 20 Aug 74, 67p ISS-L-74/7
Language in Italian.

Descriptors: *Charged particles, *Particle beams, *Spectrometers, Dipoles, Magnetic lenses, Magnetic properties, Matrix methods, Quadrupoles.

For abstract, see STAR 1313

PAT-APPL-441 081/GA PC$3.25/MF$2.25
Department of the Navy Washington D C
High-Speed Sampler with Variable Sample Rate.
Patent Application,
Jon H. Bumgardner. Filed 11 Feb 75, 10p Rept no.
Government-owned invention available for licensing. Copy of application available NTIS.

Descriptors: *Radar pulses, *Samplers, Patents, Digital systems.
Identifiers: *Patent applications, PAT-CL-328-151.

The patent application describes a digital high-speed pulse sampler wherein the pulse (such as radar-pulses) is broken up into small segments and each segment is stored in separate sample-and-hold circuits such that the pulse may be examined in detail by circuitry coupled to the output of the sampler.

PAT-APPL-458 156/GA PC$3.25/MF$2.25
Department of the Navy Washington D C
Water Level Gauge.
Patent Application,

Norwood H. Rector. Filed 5 Apr 74, 12p Rept no.

Government-owned invention available for licensing. Copy of Application available NTIS.

Descriptors: *Liquid level gages, *Oceanographic equipment, Probes, Electronic equipment, Printed circuits, Power supplies, Patents.
Identifiers: *Patent applications.

The patent application relates to an improved device for measuring liquid levels and specifically provides a pair of capacitance probes, one of which is coated with a dielectric material, positioned in a stilling well which is coupled to a conical housing for an entrance orifice to provide controlled level changes. It is provided with electronic circuitry and recording equipment and power pack.

PAT-APPL-563 283/GA PC$3.25/MF$2.25
National Aeronautics and Space Administration. Pasadena Office, Calif.
Sampler of Gas Borne Particles.
Patent Application.
C. G. Miller, and J. B. Stephens. Filed 28 Mar 75, 17p NASA-CASE-NPO-13396-1
Contract NAS7-100
Government-owned invention available for licensing. Copy of application available NTIS.

Descriptors: *Air sampling, *Particle density (Concentration), Filters, *Patent applications, Pressure distribution, Vacuum apparatus.

An atmosphere sampler includes a very thin filter element with straight-through holes on the order of 1 micron. A sample of air with particles to be examined is driven by means of a pressurized low molecular weight gas, e.g., He to the filter element front side. A partial vacuum may be present at the back side of the filter element. The pressure differential across the filter element is just below the rupture point of the filter element. By admixing a low molecular weight gas as the carrier gas with the air sampler, the velocity is maximized for the particular pressure differential across the filter element.

PAT-APPL-565 162/GA PC$3.75/MF$2.25
National Aeronautics and Space Administration. Pasadena Office, Calif.
Method and Apparatus for Providing a Servodrive Signal in a High Speed Stepping Interferometer.
Patent Application.
R. A. Schindler. Filed 4 Apr 75, 30p NASA-CASE-NPO-13569-1
Contract NAS7-100
Government-owned invention available for licensing. Copy of application available NTIS.

Descriptors: *Interferometers, *Servomechanisms, Analog to digital converters, High speed, Infrared spectra, *Patent applications.

In infrared spectroscopy utilizing an interferometer, position stepping of the optical path difference in the interferometer must be accomplished quite rapidly. This is accomplished by applying a drive signal to the moveable mirror in the interferometer. As the mirror moves in response to this drive signal, effectively getting closer to the new null point, the drive signal is gradually reduced, in response to detected reference laser fringes. At the new null position, the drive signal will effectively be zero. A binary up/down counter drives a digital/analog converter (DAC). The output from the DAC is supplied to the mirror moving means. The fringes generated by a reference laser are detected as the mirror moves, causing the up/down counter to be decremented to its null count, thereby reducing the output of the DAC.

PAT-APPL-567 661/GA PC$3.75/MF$2.25
Department of the Navy Washington D C
Synthetic Motion Generator.
Patent Application,
Joseph R. Owen. Filed 14 Apr 75, 31p Rept no.

Government-owned invention available for licensing. Copy of application available NTIS.

Descriptors: *Simulators, Patents, Motion, Ocean waves, Periscopes, Training devices.
Identifiers: *Patent applications, PAT-CL-178-35.

The patent application incorporates in a synthetic sea wave generator the provision of sawtooth generators and tuneable oscillators to modulate sweep voltages of a television camera to generate realistic wave motion in a seascape scene. Also, a video-to-logic converter is used in conjunction with a sample and hold circuit to sample the camera video output voltage, determine the horizon position, and initiate the camera sweep modulation below the horizon. The sawtooth generator changes the amplitude of the camera sweep modulation voltage from a zero modulation voltage at the distant horizon to a maximum modulation at the bottom of the display screen. The basic principal of the device wherein a stretching and distortion type of motion is provided by appropriate modulation of camera sweep signal is also applicable to any application where such motion is desirable.

PATENT-3 867 836 Not available NTIS
Department of the Navy Washington D C
Crack Detection Apparatus and Method.
Patent,
John G. Sessler, and Volker Weiss. Filed 26 Mar 73, patented 25 Feb 75, 5p Rept nos. PAT-APPL-345 164,
Government-owned invention available for licensing. Copy of patent available Commissioner of Patents, Washington, D.C. 20231 $0.50.

Descriptors: *Ultrasonic tests, *Ultrasonic inspection, *Nondestructive testing, *Patents, Cracks, Detection, Pulse generators.
Identifiers: PAT-CL-73-67-5-R.

The patent describes an apparatus and method for non-destructively detecting the presence and the location of crack in materials, using low frequency mechanical vibrations. The material specimen or structure having a crack to be detected is subjected to tensile or compressive forces due to excitation caused by low frequency sound waves or mechanical vibrations from a generator, thus changing the opening and thereby changing the effective size of the crack in the specimen. An ultrasonic search unit is used to follow modulations of reflected energy at the crack interface due to variations of the effective size of the crack. The search unit is controlled by an ultrasonic pulser-receiver which displays the amplitude of echo from the crack on an oscilloscope.

PATENT-3 875 500 Not available NTIS
National Aeronautics and Space Administration. Marshall Space Flight Center, Huntsville, Ala.
Pseudo-Noise Test Set for Communication System Evaluation.
Patent.
G. R. Wallace, W. E. Salter, G. D. Weathers, and S. S. Gussow. Patented 1 Apr 75, 6p PAT-APPL-419 831
Misc-Filed 28 Nov. 1973 Supersedes N74-13146 (12- 04, p 0413).
Government-owned invention available for licensing. Copy of patent available from Commissioner of Patents, Washington, D.C. 20231 $.50.

Descriptors: *Noise generators, *Pseudonoise, *Signal generators, *Telecommunication, Channels (Data transmission), *Patents, Performance tests, Root-mean-square errors, Signal distortion.
Identifiers: PAT-CL-324-57-PS.

A test set for communications systems is described which includes a pseudo noise sequence generator providing a test signal that is fed to a pair of signal channels. The first channel includes a spectrum shaping filter and a conditioning amplifier. The second channel includes a variable delay circuit, a spectrum shaping filter matched to the first filter, and an amplifier. The output of the first channel was applied to the system under test. The output of the system and the output of the second channel are compared to determine the degree of distortion suffered by the test signal due to the communications system.

PB-241 710/3GA PC$4.25/MF$2.25
Coordinating Research Council, Inc., New York.
Cooperative Evaluation of Techniques for Measuring Nitric Oxide and Carbon Monoxide in Diesel Exhaust Phase IV Test Results,
Joseph Perez. Jan 75, 66p CRC-472, CRC-APRAC-CAPI-1-65-8

Descriptors: *Gas analysis, *Nitrogen oxide(NO), *Carbon monoxide, Test methods, Precision, Comparison, Performance evaluation, Diesel engines, Experimental data, Chemiluminescence.
Identifiers: *Diesel engine exhaust, Interlaboratory studies, Nondispersive infrared spectroscopy.

This is a fourth in a series of tests conducted as a Coordinating Research Council, Inc. (CRC) cooperative program to evaluate the measurement methods used to analyze diesel exhaust gas constituents. A multi-cylinder engine was circulated to fifteen participants who measured emissions at three engine conditions. All fifteen participants measured nitric oxide and carbon monoxide with several laboratories measuring nitric oxide by both NDIR (Non-Dispersive Infrared) and CHEMI (Chemiluminescence). Some participants also measured carbon dioxide, nitrogen oxide, and oxygen and 'Unknown' span gases. These test results were compared with the Phase III cooperative tests which involved simultaneous measurement of emissions by participants. The precision of the results was poorer in Phase IV than Phase III (PB-206 730).

PB-242 330/9GA PC$4.25/MF$2.25
Arizona Univ., Tucson. Dept. of Electrical Engineering.
Application of Specific Military/Space Development to the Public Sector.
Annual rept.,
Stuart A. Hoenig. Jun 74, 66p NAS/RA/R-74-030
Grant NSF-DI-039554

Descriptors: *Universities, *Industrial relations, *Research and development, New technology, Research support, Technology transfer, Mine cables, Electronic test equipment, Silicosis, Electrostatic precipitation, Waste utilization, Methane, Catalysis.
Identifiers: *University industry relations, Exoelectron technology.

This interim report describes a potential experiment in cooperative research involving a university and an industry, whereby limited government cost-sharing is used as an incentive for establishing a long term cooperative program. It describes the steps taken by the author in attempting to establish the cooperative program with industrial organizations. Barriers encountered, steps taken to overcome the barriers, and conditions necessary to induce industrial participation in the program are outlined. The research discussed includes monitoring of mine hoist cables, exoelectron

technology, electrostatic dust control, and methane production from sewage.

SAND-75-5132 PC$4.00/MF$2.25
Sandia Labs., Albuquerque, N.Mex.
Portable Kerr System for the Measurement of High Voltage Pulses.
R. E. Jr. Hebner, and S. R. Booker. 1974, 5p
CONF-750405-1

Descriptors: (*Pulses, *Measuring methods), (*Optical systems, *Kerr effect), Laser radiation, Mirrors, Oscillographs, Photodetectors, Polarization, Pulse rise time.

For abstract, see NSA 31 12, number 35721.

UCRL-76541 PC$4.25/MF$2.25
California Univ., Livermore Lawrence Livermore Lab.
Pattern Recognition for Understanding and Modeling Materials Problems.
C. F. Bender, L. R. Carlson, and R. H. Pritchard.
12 Feb 75, 22p CONF-750330-1

Descriptors: Chemical reactions, Computer calculations, Data processing, Design, Diagrams, Images, Iterative methods, Liquids, Maps, Metals, Minerals, Production, Shape, Solids.

For abstract, see NSA 31 12, number 35711.

14C. Recording Devices

AD-905 072/5GA PC$6.25/MF$2.25
Resalab, Inc., Dallas, Tex. Light Electronics Div.
Ultraviolet Laser Recording Techniques for Side Looking Radar Applications.
Final rept. 15 Oct 71-15 Aug 72,
Arthur L. Morganstern, William R. Limburg, and W. T. Kelly. Aug 72, 169p AFAL-TR-72-284
Contract F33615-72-C-1055
Distribution Limitation now Removed.

Descriptors: *Lasers, *Side looking radar, *Recording systems, Ultraviolet radiation, Gas lasers, Mirrors, Broadband, Transfer functions, Resolution, Modulators, Mapping, Real time, Aerial reconnaissance, Photographic recording systems, Electrooptics, Helium, Cadmium, Crystals, Optics, Synthetic aperture radar, Image motion compensation, Ground speed.
Identifiers: Chirp radar, *Laser beam recorders, LBR(Laser Beam Recorders), Modulation, Transfer functions, Raster scanners.

This report describes the analytical and experimental work done to investigate the advantages, design tradeoffs, and potential problems associated with the use of ultraviolet and near-ultraviolet lasers in very high resolution and very wide bandwidth precision raster type laser beam recorders (LBR'S) for side-looking radar and other reconnaissance sensor applications. Recommended designs are presented for each of the major subsystems of the recorder, including the traveling-wave light modulator design, and a new type of high speed mirror scanner employing thermoelectrically pumped freon as a lubricant in a completely closed system. The recommended (most promising) laser for this application is the ruggedized helium-cadmium gas laser. Recommended photographic films are also presented and discussed. Two conceptual designs for precision wide-bandwidth LBR'S are described. One using a flat-field approach and one employing a curved field configuration.

14D. Reliability

N75-21650/7GA PC$3.75/MF$2.25
Michigan Univ., Ann Arbor.
Theory of Reliable Systems.
Final Report, 1 Jan. - 31 Dec. 1974.
J. F. Meyer. Apr 75, 28p NASA-CR-142608
Contract NGR-23-005-622

Descriptors: *Reliability engineering, *Systems engineering, Input/output routines, System failures.

For abstract, see STAR 1313

N75-21651/5GA PC$3.75/MF$2.25
Michigan Univ., Ann Arbor. Systems Engineering Lab.
Computation-Based Reliability Analysis.
Final Technical Report, 1 Jan. - 31 Dec. 1974.
J. F. Meyer. Jan 75, 34p NASA-CR-142615, UMICH-012146-2-T
Contract NGR-23-005-622

Descriptors: *Computer systems design, *Reliability analysis, Communication equipment, Control equipment, Electronic equipment, Quantitative analysis.

For abstract, see STAR 1313

14E. Reprography

AD-A010 701/1GA PC$5.25/MF$2.25
Advisory Group for Aerospace Research and Development Paris (France)
A Guide to Microfiche Equipment Available in Europe.
Apr 75, 104p Rept no. AGARD-R-628
NATO furnished.

Descriptors: *Microfilm, *Microfiche, Photographic equipment, Data storage systems, Film readers, Copying cameras, Cutters, Densitometers, Reproduction(Copying), Microphotography, Europe, NATO.

The Guide is composed of six sections: (1) Cameras and Camera-Processors, (2) Processors, (3) Duplicators and Printer-Processors, (4) Reader-Printers (at the back of the section are included two enlargers), (5) Readers, (6) Cutters, Reader-Fillers, Strip-Up Systems, Inspection Devices, Densitometers, and the two most commonly used test targets. Equipment in each section is listed alphabetically by manufacturer, with the names and addresses of their distributors in the appendix, alphabetically listed per European country. An 'Indicative Price' is included for each item giving an indication of price as of the final quarter of 1974.

COM-75-10593/2GA PC$4.25/MF$2.25
International Imaging Systems, Mountain View, Calif.
Experiments in Oceanographic Aerospace Photography. III. Some Films and Techniques for Improved Ocean Image Recording.
Final rept.,
D. S. Ross. 4 Aug 74, 68p TR-C203-5 NOAA-75040903
Grant NOAA-3-35337

Descriptors: *Oceanographic data, *Aerial photography, *Remote sensing, *Photographic equipment, Photogrammetry, Photointerpretation, Ocean waves, Optical detectors, Photographic film, Ocean surface, Light transmission, Tests.
Identifiers: Multiband spectral reconnaissance.

It is believed that photographic materials, equipment, and techniques are available for achieving very significant improvements in blue and green ocean image recording, and that a multispectral system can be standardized for operational use with a minimum of further development. It was concluded that acquiring blue and green multispectral imagery of ocean subjects with films such as Royal Ortho 2569 is operationally feasible, and that such images contain, by several factors, more spectral and spatial information than with conventional aerial black-and-white or color films. Water penetration is significantly improved, and water color differences are much enhanced. Information is secured which is not recorded at all on standard emulsions. Contrast degradation effects of atmospheric and water hazes are greatly diminished.

N75-21598/8GA PC$3.75/MF$2.25
Technicolor Graphic Services, Inc., Houston, Tex.
Evaluation of Film Type Qx 807 (So-368, Kodak Ektachrome Ms, Estar Thin Base, with an Equivalent Wratten 2A Filter Overcoat).
H. E. Lockwood. Apr 75, 31p NASA-CR-141734
Contract NAS9-11500

Descriptors: *Apollo soyuz test project, *Color photography, *Photographic film, Aerial photography, Performance prediction, Performance tests, Spectrum analysis.

For abstract, see STAR 1313

PB-241 830/9GA PC$3.75/MF$2.25
National Inst. of Law Enforcement and Criminal Justice, Washington, D.C.
Fixed Surveillance Cameras - Selection and Application Guide,
George L. Hamlin, and Charles G. Grover. Dec 74, 31p NILE/CJ-GUIDE-0301.00

Descriptors: *Cameras, *Surveillance, *Crime reduction, *Business organizations, Crime prevention, Security systems, Monitors, Motion picture cameras, Photography, Television cameras, Shoplifting, Technology development, Management planning, Selection, Objectives.
Identifiers: Still cameras, Robberies, Employee theft, Fixed surveillance cameras.

Fixed surveillance photography involves use of permanently installed cameras and equipment to monitor areas where criminal activity is likely. The three types of equipment addressed are still cameras, motion-picture cameras, and television systems. The purpose of this guideline is to provide information which will enable a small businessman to independently analyze his security needs, decide if photographic surveillance seems to answer those needs, and plan generally what type of system best fits his requirements. Sufficient detail is presented to permit intelligent discussions with sales representatives in choosing the most satisfactory surveillance equipment. Information is also provided to inform the potential user of such equipment of routine maintenance requirements and proper installation techniques. This guide deals mainly with robbery, shoplifting, and employee theft, discussing surveillance methods, techniques, and the considerations involved in combating these types of crime.

15. MILITARY SCIENCES

15A. Antisubmarine Warfare

AD-A010 813/4GA PC$6.25/MF$2.25
Naval Postgraduate School Monterey Calif
Passive Environmental ASW Prediction System (PEAPS).
Master's thesis,
Michael Edward Beckes, Nicholas Pegau Burhans, and Robert Edgar Gump. Mar 75, 170p Rept no. NPS-71Be75031

Descriptors: *Antisubmarine warfare, *Passive sonar, Ray tracing, Underwater sound, Mathematical prediction, Mathematical models, Computer applications, Theses, Acoustic velocity, Computations, Computer programs, FORTRAN.
Identifiers: PEAPS computer program.

PEAPS (Passive Environmental ASW Prediction System) is a relatively unsophisticated model which accepts input source and receiver parameters and then predicts sound propagation characteristics in an ocean environment, the corresponding transmission loss, and the probability of detection. The program was written for a programmable desk-top calculator for immediate deployment and operational testing aboard small ASW platforms. The program is also available in a form suitable for larger computers.

15B. Chemical, Biological, and Radiological Warfare

AD-A010 666/6GA PC$3.25/MF$2.25
Edgewood Arsenal Aberdeen Proving Ground Md
Vapor Pressure Measurements of Some Chemical Agents Using Differential Thermal Analysis. Part III.
Technical rept. Jun 72-Jun 73,
Frederic Belkin, and Harry A. Brown, Jr. May 75, 11p Rept no. EC-TR-75032

Descriptors: *Vapor pressure, *GD agent, *GA agent, *Chemical warfare agents, Differential thermal analysis, Heat of vaporization.
Identifiers: Phosphonothioic acid/O-O'-(diethyl-ester)-methyl, Phosphonothioates, Dimethyl trisulfide, EA3580B agent.

Vapor pressure data were obtained for GA, GD, EA 3580B, dimethyl trisulfide, and O,O'-diethyl methylphosphonothioate by use of a modified differential thermal analysis (DTA) method. The data were fitted to the Antoine vapor pressure equation and volatilities and heats of vaporization were calculated.

15C. Defense

AD-A010 630/2GA PC$2.75/MF$2.25
Army Construction Engineering Research Lab Champaign Ill
Experimental Verification of Ventilation Analysis Procedure.
Final rept.,
John J. Burns, Jr. Apr 75, 43p Rept no. CERL-TR-C-29

Descriptors: *Fallout shelters, *Environmental engineering, *Ventilation, Air flow, Model tests, Thermodynamics, Underground structures, Civil defense.

This report represents the results of an experiment to verify the adequacy of a supplement to ER 1190-1-2 and TR 20 (Volume 3), the Technical Manual for Ventilation Analysis Procedure. The purpose of the experiment was to predict the rate of induced air flow through a fallout shelter. The only applied force in the shelter is the sensible heat given off by its occupants. Induced air flows through three model chambers containing resistance heaters that simulated body heat air-flow speeds from 10 to 30 fpm were measured using thermistors. After demonstrating that the model test results would be similar to the flows expected in larger shelters of a similar geometry, test runs involving one and two chamber wall cutouts were conducted.

AD-A010 632/8GA PC$4.75/MF$2.25
Army Construction Engineering Research Lab Champaign Ill
Facility Simulation Model for Advanced BMD Systems. Volume VI: Miscellaneous Module.
Final rept.,
A. Kao, R. Blackmon, and E. McDowell. Apr 75, 83p Rept no. CERL-TR-C-28
See also Volume IV B, AD-A009 748.

Descriptors: *Antimissile defense systems, *Computerized simulation, Radar stations, Computer programs, Costs.
Identifiers: SITE computer program, OANDM computer program, AETPH computer program, VOLUME computer program.

This module consists of four unrelated programs: Program SITE which includes the sitework, off-site utilities, and real estate program; Program OANDM, which includes the operation and maintenance cost programs; Program AETPH, which includes architectural, structural, electrical, mechanical, and power items cost; and Program VOLUME, which is the structure selection program. The first three programs are designed to be used either separately or in conjunction with other modules for estimating a total facility cost. The fourth program is independent and not to be used in conjunction with the other programs in the simulation model.

AD-A010 653/4GA PC$3.75/MF$2.25
Edgewood Arsenal Aberdeen Proving Ground Md
Camouflage Smoke Study.
Technical rept. Jul-Dec 74,
Melvin N. Gerber. May 75, 33p Rept no. ED-TR-75035

Descriptors: *Smoke generators, *Smoke screens, Fog, Colorants, Pyrotechnics, Performance(Engineering), Colored smokes, Camouflage.

The smoke generated from pyromix SW59-type and photoflash mixtures was compared to that generated by equal volumes of white phosphorus (WP) and titanium tetrachloride (FM). WP smoke was superior to all smokes tested by a factor varying from two to 10 depending on which mix was evaluated. The FM smoke was equivalent to the smoke generated from a modified SW59 mixture and superior to the others. Light-green, brown- and blue-colored smokes were generated from the M3 smoke generator. A new mechanism for coloring the smoke emitted from this generator was devised. A miniature rapid-functioning oil smoke generator was demonstrated. It generated a cloud 40- to 50-feet-long and 10- to 15-feet-high in 3 seconds.

AD-A010 713/6GA PC$6.25/MF$2.25
Army Construction Engineering Research Lab Champaign Ill
Facility Simulation Model for Advanced BMD Systems. Volume IIIC: Structural Module: Program Listing.
Final rept.,
A. Kao, R. Blackmon, and E. McDowell. Apr 75, 158p Rept no. CERL-TR-C-28-Vol-3C
See also Volume 3A dated Apr 75, AD-A009 747.

Descriptors: *Antimissile defense systems, *Underground facilities, *Hardened structures, Heating, Cooling and ventilating equipment, Air conditioning equipment, FORTRAN, Computer programs, Cost analysis.

This structural module volume is divided into a user's manual, a program reference manual, and a program listing. In this program listing, the FORTRAN programs of five programs in the structural module are documented. These five programs are Program BLDG, Program FRAME, Program DOME, Program SILO, and Program SISOL.

AD-A010 714/4GA PC$5.75/MF$2.25
Army Construction Engineering Research Lab Champaign Ill
Facility Simulation Model for Advanced BMD Systems. Volume VA: HVAC/PC Module: User's Manual.
Final rept.,
A. Kao, R. Blackmon, and E. McDowell. Apr 75, 141p Rept no. CERL-TR-C-28-Vol-5A
See also Volume 4B dated Apr 75, AD-A009 748.

Descriptors: *Antimissile defense systems, *Underground facilities, *Hardened structures, Heating, Cooling and ventilating equipment, Air conditioning equipment, FORTRAN, Computer programming, User needs, Cost analysis.

This HVAC/PC module volume is divided into a user's manual, a program reference manual, and a program listing. The computer module presented in this user's manual is capable of conceptually designing and simulating heating, ventilation, and air conditioning (HVAC) systems and process cooling (PC) systems for hardened military facilities. The computer programs are capable of comparing various system configurations in terms of cost, performance, and reliability. This user's manual outlines the intended use of each program, and gives instructions for input data and examples of reports generated by the two programs.

AD-A010 715/1GA PC$7.25/MF$2.25
Army Construction Engineering Research Lab Champaign Ill
Facility Simulation Model for Advanced BMD Systems. Volume VB: HVAC/PC Module: Program Reference Manual.
Final rept.,
A. Kao, R. Blackmon, and E. McDowell. Apr 75, 203p Rept no. CERL-TR-C-28-Vol-5B
See also Volume 5A dated Apr 75, AD-A010 714.

Descriptors: *Antimissile defense systems, *Underground facilities, *Hardened structures, Heating, Cooling and ventilating equipment, Air conditioning equipment, FORTRAN, Computer programming, Instruction manuals, Cost analysis.

The HVAC/PC Module volume is divided into a user's manual, a program reference manual, and a program listing. The HVAC/PC Module develops a conceptual design for the HVAC and PC system and estimates its initial and life-cycle costs. The computer programs, whose algorithms are explained herein, are capable of comparing various system configurations in terms of cost, performance, and reliability. Although HVAC/PC Programs 1 and 2 were designed to be used in conjunction with other modules (structural, power generation, electrical distribution, etc.), they can be used separately to design and analyze only the HVAC and PC systems of a given hardened facility. This program reference manual outlines the intended use of each program and explains the algorithms that make up each program part.

AD-A010 805/0GA PC$4.25/MF$2.25
Institute for Defense Analyses Arlington Va Program Analysis Div
Analysis and Identification of Nationally Essential Industries. Volume 1: Theoretical Approach.
Final rept.,
Jane Leavitt. Mar 74, 60p Rept no. P-972-Vol-1
IDA/HQ-74-16122
Contract DAHC20-73-C-0257
See also Volume 2, AD-A010 806 and AD-772 507.

Descriptors: *Civil defense, *Economics, *Industries, *Postattack operations, Nuclear warfare, Recovery, Management planning and control.
Identifiers: Emergency preparedness planning.

The report reviews previous research in determining criteria for location of essential or critical industries vital to the operation of the U.S. economy. A comparison and evaluation of these criteria is made. Suggestions for future research on these fields are given.

AD-A010 806/8GA PC$4.75/MF$2.25
Institute for Defense Analyses Arlington Va Program Analysis Div

Analysis and Identification of Nationally Essential Industries. Volume 2: Methodology and Results.
Final rept.,
Abner Sachs, and Jane Leavitt. Sep 74, 93p
Rept no. P-972 IDA/HQ-74-16770
Contract DAHC20-73-C-0257
See also Volume 1, AD-A010 805 and AD-772 507.

Descriptors: *Civil defense, *Economics, *Industries, *Postattack operations, Nuclear warfare, Recovery, Rehabilitation, Management planning and control, Food, Fuels, Drugs, Transportation.
Identifiers: Emergency preparedness planning.

The report develops criteria and a methodology for developing Nationally Essential Facilities by four-digit SIC (Standard Industrial Classification) Code. It presents interim lists for both High-Risk and Low-Risk areas. The rationale for inclusion of an industry on the list is included. Recommendations for future analysis and research are included.

AD-A010 807/6GA PC$5.25/MF$2.25
Institute for Defense Analyses Arlington Va Program Analysis Div
Local Vital Facilities Lists: Identification of Industries and Facilities Essential to the Life Support of the Prototype San Antonio, Texas Crisis Relocation Area.
Final rept.,
Jane T. Leavitt. Nov 74, 124p Rept no. P-1070 IDA/HQ-74-16830
Contract DAHC20-73-C-0257
See also AD-772 507.

Descriptors: *Civil defense, *Economics, *Industries, *Postattack operations, Nuclear warfare, Recovery, Management planning and control, Industrial plants, Manufacturing, Urban areas, Texas.
Identifiers: San Antonio(Texas), Emergency preparedness planning.

The Report identifies local vital industries and facilities by the 1972 four-digit Standard Industrial Classification codes. Tentative lists of some manufacturing plants and some nonmanufacturing sectors are given for the San Antonio prototype crisis relocation area as a test case.

AD-A010 808/4GA MF$2.25
American Technical Assistance Corp Mclean Va
Postattack Resource Management.
Final rept.,
Elwyn M. Bull, and Hebron E. Adams. May 75, 85p Rept no. OAD-A-CR-108
Contract DAHC20-73-C-0267
Availability: Available in microfiche only.

Descriptors: *Civil defense, *Nuclear warfare, *Postattack operations, Industries, Manpower, Labor, Resources, Economic models, Measurement, United States, FORTRAN.
Identifiers: *Postattack economy, Input output models, Economic sectors, Economic recovery, ROPE 2 computer program, FORTRAN 4 programming language.

The Runout Production Evaluation (ROPE) Model has been expanded to handle a 173-sector input-output model of the US economy in the first 90 days following a nuclear attack. The increased number of sectors permits greater accuracy in the assignment of sectors to priority classifications and improves the model's ability to identify bottlenecks in interindustry flows, when necessary inputs are in short supply. Also, the addition of a manpower constraint permits the assessment of shortages of labor inputs or output.

AD-A010 853/0GA PC$3.75/MF$2.25
Naval Postgraduate School Monterey Calif
The Structural Evolution of Naval Air Squadrons.
Master's thesis,
Steven Rubin Alexander. Mar 75, 39p

Descriptors: *Military organizations, *Naval aviation, History, Organization theory, Complex variables, Theses.
Identifiers: *Squadron level organizations.

Five consecutive years in the evolution of nine U.S. Navy air squadrons were studied to determine the effects of organization size on complexity. Path analysis was used to examine hypothesized causal relationships. Size was found to be less influential than had been expected. The longitudinal approach presented different views of the same organization depending on the variables observed and the time between measurements.

AD-A010 936/3GA PC$3.25/MF$2.25
Rand Corp Santa Monica Calif
The Air Reserve Forces and the All-Volunteer Force: A Statement Before the Defense Manpower Commission,
Bernard Rostker. Jan 75, 17p Rept no. P-5359

Descriptors: *Military reserves, *Air Force personnel, Costs, Personnel management, Recruiting, Manpower utilization.
Identifiers: All volunteer military services, Air Reserve Forces.

The author reviews the effects of the All Volunteer Force on the personnel structure of the Air Reserve Forces.

AD-A010 985/0GA PC$7.00/MF$2.25
Adjutants General Association of the United States Washington D C
Annual Meeting of the Adjutants General Association of the United States, Washington, D.C. Held at Hotel Statler on February 26-27-28, March 1, 1947 in Washington, D.C.
1 Mar 47, 179p

Descriptors: *Military reserves, *National Guard, *Meetings, Organizations, Military planning, Policies, Department of Defense.

AD-A011 104/7GA PC$3.75/MF$2.25
Pittsburgh Univ Pa Dept of Sociology
Crisis Relocation: Perspectives of Americans.
Jiri Nehnevajsa. Jan 75, 48p
Contract DAHC20-72-C-0145

Descriptors: *Civil defense, *Evacuation, *Urban areas, Public opinion, Attitudes(Psychology), Statistical data, Relocation, Survival(General), Disasters, Management planning and control, Sociology, Nuclear warfare.
Identifiers: Emergency preparedness planning.

The study assesses the desirability of feasibility studies of population evacuation. Among the major factors affecting feasibility, public acceptance of relocation concepts must rank high. Four national attitudinal surveys concluded during the past year give significant evidence of how different population segments view the desirability of an evacuation program. The data support the conclusion that crisis relocation planning is acceptable to most Americans, and that the sentiments revealed in the national studies establish supportive, though passive, attitudes which make it altogether possible to proceed both with feasibility assessments, and in terms of acceptability, with actual planning.

AD-A011 108/8GA PC$7.25/MF$2.25
IIT Research Inst Chicago Ill
Casualties Produced by Impact and Related Topics of People Survivability in a Direct Effects Environment.
Final rept. 18 May 73-31 Jul 74,
A. Longinow, E. Hahn, A. Wiedermann, and S. Citko. Aug 74, 221p Rept no. ITTRI-J6306-FR
Contract DAHC20-73-C-0196

Descriptors: *Civil defense, *Casualties, *Nuclear weapons, *Fallout shelters, Blast waves, Impact, Debris, Personnel, Safety, Mines(Excavations), Shelters, Survival(General).

The study predicts the survivability of people located in conventional buildings when subjected to the direct effects of megaton range nuclear weapons. Casualty-producing effects considered include (1) dynamic pressures of blast waves and (2) debris. The purpose of results is to categorize and rank casualty mechanisms and on this basis identify shelter spaces which are most likely to offer protection against them. Related topics include a classification of shelter spaces, analysis of a fallout shelter against the effects of blast, feasibility of using large limestone mines as shelters and the analysis of an emergency operating center against the direct effects of nuclear weapons.

15D. Intelligence

AD-A010 643/5GA PC$3.75/MF$2.25
Army Engineer Topographic Labs Fort Belvoir Va
A Terrain Effects Analysis Routine for an MGI System.
Final rept.,
Richard D. Sands. Apr 75, 34p Rept no. ETL-0010

Descriptors: *Tactical intelligence, *Terrain intelligence, Data acquisition, Decision making, Military tactics, Environments, Data processing.
Identifiers: Military geographic intelligence.

The purpose of the research was to explore the feasibility of developing a methodology that would lead to an automated terrain effects analysis routine which would succinctly and unequivocally link specific physical environmental conditions with the entire spectrum of military tactical operations. A methodology is developed and presented. The methodology takes into account the position and function of such a routine within an automated MGI system, the need to consider specific critical values for specific equipment systems, and the problem of nomenclature for all environmental features and phenomena.

15E. Logistics

AD-A010 702/9GA PC$3.75/MF$2.25
Army Natick Labs Mass
Behavior of Pressure Stabilized Beams under Load.
Technical rept.,
Earl C. Steeves. May 75, 38p Rept no. USA-NLABS-TR-75-82-AMEL
See also AD-A006 493.

Descriptors: *Portable shelters, *Inflatable structures, *Beams(Structural), Shear properties, Loads(Forces), Bending, Dacron, Nylon, Army equipment.
Identifiers: *Pressure stabilized structures, *Pressurized beams.

The utilization of pressure stabilized structural elements in tentage support structures requires techniques for the design of such elements. A theory has been developed and reported previously for carrying out such a design of pressure stabilized beams. In this report an experimental investigation of the behavior of pressure stabilized beams under load is described and the ex-

perimental results are correlated with predictions from the theory. This correlation establishes the validity of the theory for predicting the deformation and load carrying capacity of pressure stabilized beams.

AD-A010 799/5GA PC$4.75/MF$2.25
Naval Postgraduate School Monterey Calif
Subhead 30.00 Support Planning Model.
Master's thesis,
Russell Allen Askey. Mar 75, 83p

Descriptors: *Coast Guard, *Budgets, *Management planning and control, Logistics planning, Costs, Theses.
Identifiers: Planning programming budgeting, Input output analysis.

The present era of austere budgets and changing Coast Guard missions has brought new importance to the task of estimating future resource requirements. Also, to a large extent the future effectiveness of the Coast Guard is dependent upon the ability of Coast Guard planners to compete with other federal agencies for the limited funds available. This requires that budget requests be justified and well documented. An important part of any Coast Guard Budget request is that portion dealing with the resource requirements of the support establishment. However, because of the special nature of the support establishment, one of the more difficult tasks facing a Coast Guard planner is estimating support costs. This thesis addresses this problem by presenting a method, based upon input-output analysis, for estimating future support costs.

AD-A010 821/7GA PC$3.75/MF$2.25
Navy Fleet Material Support Office Mechanicsburg Pa Operations Analysis Dept
Development of Best Unit Price Data,
J. L. Engelman. 4 Jun 75, 46p Rept no. 119

Descriptors: *Military equipment, Costs, Spare parts, Inflation(Economics), Estimates, Standard deviation.
Identifiers: *Unit prices.

Early in the provisioning process, an estimated price for a secondary item is provided which is often significantly less than that quoted at the time of item procurement. This inaccurate estimate often results in either (1) a cut back in the desired buy quantity, (2) the short changing of other programs, or (3) the administrative problem of reprogramming funds to cover requirements. Thus, it is important to investigate procedures which will improve the initial price estimate. A technique has been successfully applied to determine a representative replacement factor for families of items. The purpose of this study was to determine the feasibility of developing a best unit price for families of items. The principle cited and a number of alternatives were applied. It is concluded that the proposed method for developing best unit prices is inadequate and infeasible.

AD-A010 851/4GA PC$4.25/MF$2.25
Naval Postgraduate School Monterey Calif
An Organizational Analysis of the Harpoon ILS Organization.
Master's thesis,
Herbert Keith Brattain. Mar 75, 56p

Descriptors: *Logistics support, *Antiship ammunition, *Organization theory, Naval logistics, Mathematical models, Systems analysis, Performance, Assessment, Theses.
Identifiers: *Harpoon weapon system, *Integrated logistic support.

The objective of this thesis was to analyze the organizational effectiveness of the Harpoon ILS (Integrated Logistics Support) organization. Specifically the study attempts to answer the question: How does the Harpoon ILSMT (Integrated Logistics Support Management Team) function and how effective is it in achieving ILS objectives. Four aspects of this question were addressed: (1) an analytical description of the ILSMT, (2) an assessment of the ILSMT and its supportive role, (3) an evaluation of current ILSMT effectiveness, and (4) recommendations for improved ILS organizational design. The author chose to view the organization as a system of mutually dependent variables (modern organization theory) and selected Scott's Model as the vehicle for analysis. Although the ILSMT is composed of personnel from varied functional commands, the contractor, and other government agencies, this study is limited to those Navy representatives of the PMA, NAVAIR, and NAVSEA.

AD-A010 960/3GA PC$3.25/MF$2.25
Rand Corp Santa Monica Calif
Getting 'Real' Data for Life-Cycle Costing,
Marco R. Fiorello. Jan 75, 18p Rept no. P-5345

Descriptors: *Weapon systems, *Life cycles, *Costs, Estimates, Reliability, Data acquisition.

The process of identifying, collecting and using historical data for estimating the life-cycle costs of a weapon system is discussed. The focus is on data-related problems which currently constrain the accuracy and reliability of life-cycle cost estimates. Particular attention is given to the costs of ownership. A case example is provided to illustrate the estimation of life-cycle costs using macro cost data for an operational weapon system. Some of the uncertainties inherent in the data collection and analysis processes are also discussed. Specific recommendations include implementing operationally consistent life-cycle cost estimation procedures, improving weapon system cost visibility in cost data systems, establishing and maintaining a nomenclature directory, implementing better cost allocation rules, anticipation of life-cycle cost decision data requirements, and constructing and maintaining a special data base for life-cycle cost analysis and methodology development.

15F. Nuclear Warfare

AD-A010 829/0GA PC$7.25/MF$2.25
National Military Command System Support Center Washington D C
The NMCSSC Quick-Reacting General War Gaming System (QUICK). Users Manual. Volume II. Weapon/Target Identification Subsystem.
Computer system manual,
Richard L. Page, Angelo M. Pellicciotto, and Dale J. Sanders. 1 Jun 74, 205p Rept no. NMCSSC-CSM-UM-9-74-Vol-2
See also Volume 3, AD-A010 268.

Descriptors: *Nuclear warfare, *War games, *Computer programming, Strategic warfare, Antimissile defense systems, Antiaircraft defense systems, Allocations, Computerized simulation, Instruction manuals.
Identifiers: QUICK(Quick Reacting General War Gaming System), Quick reacting general war gaming system.

The NMCSSC Quick-Reacting General War Gaming System (QUICK) is used to generate missile and bomber plans suitable for strategic war gaming, and to simulate execution of the planned events. The Users Manual consists of five volumes which are intended for the user/analyst who is concerned with preparing the data base for a war game, selecting optional features of QUICK, designating control parameters, submitting computer jobs, and analyzing computer output. This volume provides instructions for using the weapon/target identification subsystem. It describes control parameters, computer job structure, and computer output from QUICK.

AD-A010 830/8GA PC$8.50/MF$2.25
National Military Command System Support Center Washington D C
The NMCSSC Quick-Reacting General War Gaming System (QUICK). Users Manual. Volume IV. Sortie Generation Subsystem.
Computer system manual,
Richard L. Page, Angelo M. Pellicciotto, and Dale J. Sanders. 1 Jun 74, 251p Rept no. NMCSSC-CSM-UM-9-74-Vol 4
See also Volume 3, AD-A010 268 and Volume 5, AD-A009 324.

Descriptors: *Nuclear warfare, *War games, *Computer programming, Strategic warfare, Antimissile defense systems, Antiaircraft defense systems, Allocations, Computerized simulation, Instruction manuals.
Identifiers: QUICK(Quick Reacting General War Gaming System), Quick reacting general war gaming system.

The NMCSSC Quick-Reacting General War Gaming System (QUICK) is used to generate missile and bomber plans suitable for strategic war gaming, and to simulate execution of the planned events. The Users Manual consists of five volumes which are intended for the user/analyst who is concerned with preparing the data base for a war game, selecting optional features of QUICK, designating control parameters, submitting computer jobs, and analyzing computer output. This volume provides instructions for using the Sortie Generation Subsystem. It describes control parameters, computer job structure, and computer output from QUICK.

15G. Operations, Strategy, and Tactics

AD-A010 584/1GA PC$8.50/MF$2.25
Naval War Coll Newport R I
The Long-Range Future of the Navy Phase II, 1972-1985. Volume I.
19 Jun 72, 275p
See also AD-759 420, and Volume 2, AD-A010 585.

Descriptors: *Force structure planning, *National defense, *Naval operations, International relations, Arms control, Disarmament, Sociology, Recruiting, Industries, Corporations, Technology, Military planning, Foreign policy.
Identifiers: International politics, *Advanced planning.

The study (in 2 volumes) is an analysis of current trends undertaken for the purpose of identifying those environmental factors which might impact on the Navy in the 1972-1985 time frame. The five environments considered are: international, sociological, corporate, technological, and military. The report is a continuation of 'The Long Range Future of the Navy' study which began in the 1970-1971 academic year. Volume 1 contains essays on each of the environments mentioned above, as well as conclusions, implications for national security, and areas for further study. Volume 2 consists of key points, tentative implications for the U.S. Navy, and an epilog, all of which are oriented to future researchers at the U.S. Naval War College and follow-on phases of this study.

AD-A010 585/8GA PC$4.25/MF$2.25
Naval War Coll Newport R I
The Long-Range Future of the Navy Phase II, 1972-1985. Volume II.
19 Jun 72, 62p
See also Volume 1, AD-A010 584.

Descriptors: *National defense, *Naval operations, International relations, Sociology, Economics, Industries, Corporations, Technology, Naval research.
Identifiers: International politics, *Advanced planning.

The study forms Phase II of a continuing effort to identify future world trends and their implications for the U.S. Navy. Phase I, completed in 1971, described major world futures without delimitation. This portion, Phase II, attempts to isolate largely American trend lines, based upon the literature as a form of delimitation and definition.

AD-A010 855/5GA PC$4.75/MF$2.25
Naval Postgraduate School Monterey Calif
Analysis of Unit Breakpoints in Land Combat.
Master's thesis,
Richard C. Adkins. Mar 75, 89p

Descriptors: *Land combat, *Decision making, *Infantry, Mathematical models, Decision theory, Dynamics, Extrapolation, Kalman filtering, Casualties, Computerized simulation, Theses.
Identifiers: *Battle termination, Withdrawal, Breakpoints.

The thesis considers battle termination (a unit reaching its so-called 'breakpoint') in ground combat as a rational decision process. A commander's decision to break contact with an enemy force and withdraw from the battlefield is analyzed for company-size infantry units. Two approaches to terminate an engagement are presented. The first approach is based on extrapolation of observations on past battle history into the future with no assumption about combat dynamics. The second is based on the assumption of known Lanchaster-type combat dynamics (possible with unknown parameters to be estimated) and uses Kalman filtering. Possible applications of such models are discussed, and related areas for future study are recommended.

AD-A010 982/7GA PC$3.75/MF$2.25
Rand Corp Santa Monica Calif
High Technology Terrorism and Surrogate War: The Impact of New Technology on Low-Level Violence,
Brian Michael Jenkins. Jan 75, 28p Rept no. P-5339

Descriptors: *Terrorism, *Insurgency, Guerrilla warfare, Weapons, Technology, Sociology, International relations, Threat evaluation, Nuclear power plants, Urban areas, Unconventional warfare.
Identifiers: International terrorism, Urban warfare, Nuclear blackmail, *Surrogate war.

The author examines the impact of technological developments on low-level violence. He examines the topic in somewhat broader terms, looks at current trends in technology, both military and civilian, and what they could mean in the long run to guerrillas and terrorists, and also what they could mean for society. The author, argues that due largely to technological developments modern guerrilla and terrorist groups are being afforded a growing capacity for disruption and destruction. The support of terrorists by any nation or group of nations in turn will further increase the terrorists' capacity for violence. It may also prevent effective international cooperation aimed at controlling international terrorism.

JPRS-64920 PC$5.75/MF$2.25
Joint Publications Research Service, Arlington, Va.
Troop Control During the Great Patriotic War,
N. N. Popel, V. S. Savelev, and P. V. Shemanskii. 4 Jun 75, 146p
Trans. of mono. Upravlenie Voiskami v Gody Velikoi Otechestvennoi Voiny, Moscow, 1974 p1-176.

Descriptors: *Command and control, *Military personnel, *Warfare, Military strategy, Military operations, Organizations, Translations, USSR.
Identifiers: World War 2.

Contents:
Organs of troop control during the war;
Organization and technical equipping of control points;
Improving operational troop control methods of commanders and staffs.

17. NAVIGATION, DETECTION, COMMUNICATIONS, AND COUNTERMEASURES

17A. Acoustic Detection

AD-A010 545/2GA PC$3.75/MF$2.25
Bolt Beranek and Newman Inc Cambridge Mass
Design Features of the Submersible Modular Acoustic System.
Preliminary rept.,
Paul T. McElroy. Mar 75, 36p Rept no. BBN-3060
Contract N00014-75-C-0659

Descriptors: *Submersibles, *Instrumentation, *Acoustic equipment, Acoustic measurement, Frequency synthesizers, Mountings, Power supplies, Data processing equipment.
Identifiers: ALVIN vessel.

The submersible modular acoustic system is a general-purpose acoustic measurement intended for use on the submersible ALVIN. It is presently nearing completion. This report gives a description of the system and its components to serve as an aid in designing experiments and to provide the instrumental basis for a series of experiments to be discussed in later reports. Other acoustic items which are available for use on ALVIN are listed, as are other submersible instruments which might profitably be used with this acoustic tool.

AD-A010 552/8GA PC$4.75/MF$2.25
Raytheon Co Portsmouth R I Submarine Signal Div
Applications of Parametric Sonar to Under-Ice Operations. Volume II.
Final rept.,
D. L. Bell, L. C. Britton, and W. J. Porter. 25 Apr 75, 79p
Contract N00024-74-C-1060

Descriptors: *Underice, *Sonar, Parametric devices, Operation, Sea ice, Profiles, Bottom.

The report describes an investigation concerning parametric sonar applications to under-ice operations. Two basic tasks are undertaken. These are first, a data gathering program in an environment which partially simualtes the under-ice environment; and second, a theoretical investigation which extrapolates the results obtained to the under-ice environment. To gather data in a representative environment, a parametric sonar operating in a sub-bottom profiling mode was used in a downward looking mode analogous to upward scanning of the water to sea-ice interface. Results were analyzed and compared to possible under-ice operations in the theoretical investigations.

AD-A010 686/4GA PC$3.25/MF$2.25
Stanford Univ Calif Microwave Lab
A New Acoustic Imaging Device,
J. F. Havlice, G. S. Kino, and C. F. Quate. 1974, 7p ARO-9358.9-EL
Contracts DAHC04-71-C-0005, N00123-72-C-0866
Proceedings of the Conference (1973 International) on Solid State Devices (5th), Tokyo (Japan), 1973.
Availability: Pub. in Jnl. of the Japan Society of Applied Physics, Supplement, v43 p189-193 1974.

Descriptors: *Acoustic detectors, *Images, *Delay lines, Piezoelectric transducers, Acoustic arrays, Focusing, Signal processing, Scanning, Resolution, Chirp filters, Reprints.
Identifiers: *Acoustic imaging devices, *Saw devices, *Tapped delay lines.

A new type of acoustic imaging device, which scans a large array of piezoelectric detectors is described. Scanning is carried out by a signal traveling along an acoustic surface wave delay line. The device can be electronically focused, and has given images of objects 20 cm from the detector array, illuminated with a 5 MHz acoustic wave, with a definition of 1 mm. (Author)

AD-A010 739/1GA PC$3.25/MF$2.25
Royal Naval Personnel Research Committee London (England)
An Unbiassed Assessment of Simulated Computer Assistance in a Signal Detection Task,
L. R. Hartley, R. G. Olsson, and J. D. Ingleby. Oct 72, 16p Rept no. OES-1/74 DRIC-BR-47366

Descriptors: *Acoustic signals, Detection, Signal to noise ratio, Performance(Human), Computer applications, Simulation, Confidence level, Test methods, Naval personnel, Man machine systems, Comparison, Statistical processes, Errors, Great Britain.
Identifiers: Task performance, *Signal detection.

Two separate groups of 16 naval ratings were asked to detect pure tone signals presented in noise. Signal probability was 0.1. One group of Ss performed with the assistance of a simulated computer functioning at 75% accuracy; the other group performed without computer assistance. Assistance was provided by 6 visual indications of confidence regarding the signal. Ss responded with 4 levels of confidence regarding the signal. Both computer and man used confidence ratings ranging from certain no/no signal to certain yes/signal. Ss were given practice at the task and then tested for 75 min per day for 8 days. Computer assistance was found to increase the proportion of correct detections made. There was some evidence that detections of the unassisted group declined over the test and that assistance reduced this decline.

AD-A010 740/9GA PC$3.25/MF$2.25
Royal Naval Personnel Research Committee London (England)
Combination of Unreliable Evidence in a Probabilistic Visual Search and Detection Task,
Graham A. Murrell, Joan Brand, Laurence R. Hartley, and Robert G. Olsson. Jul 73, 25p Rept no. OES-2/74
Prepared for Operational Efficiency Subcommittee.

Descriptors: *Sonar targets, *Target detection, Sonar operators, Computer applications, Performance(Human), Man machine systems, Sonar signals, Signal processing, Performance tests, Great Britain.

Observers watched a display screen to detect a target occurring in 0.1 of the display intervals, with or without the assistance of a simulated unreliable computer. The computer's errors were independent of the random variability in the display, so that assisted subjects had in principle more information upon which to base judgments. Observers with assistance detected

more targets than those without it, but also made more false alarm reports so that the benefit overall was slight.

AD-A011 035/3GA PC$3.25/MF$2.25
Naval Research Lab Washington D C
The Measurement of Small Wavefront Deviations Introduced by a Panel.
Interim rept.,
J. L. Lastinger, and R. F. Green. 10 Jun 75, 12p Rept no. NRL-7908

Descriptors: *Sonar domes, Acoustic beams, Underwater sound signals, Wavefronts, Deflection, Panels, Measurement.

Wavefront deviation of a low-frequency sound beam introduced by passage of the beam through a rubber panel was measured at angles of incidence from 0 to plus or minus 20 deg. The technique of measurement is described, and results and measurement problems are discussed. Resolution of the measurements is estimated as 0.01 deg, but this value probably can be improved to 0.001 deg by incorporating the changes described.

AD-A011 048/6GA PC$3.25/MF$2.25
Naval Surface Weapons Center White Oak Lab Silver Spring Md
Microphone Array Location from Sounds Made by a Passing Projectile,
Walter P. Reid. 17 Apr 75, 15p Rept no. NSWC/WOL/TR-75-46

Descriptors: *Ordnance locators, *Acoustic arrays, Microphones, Artillery, Projectiles, Projectile trajectories, Computations, Position finding.

The location of an array of microphones and azimuth of its horizontal axes are determined by using differences in arrival times of sound from a passing projectile as received at three pairs of microphones.

PATENT-3 859 620 Not available NTIS
Department of the Navy Washington D C
Hydrophone Line Array Calibration Unit.
Patent,
Joseph L. Percy. Filed 23 Jan 74, patented 7 Jan 75, 6p Rept nos. PAT-APPL-435 912,
Government-owned invention available for licensing. Copy of patent available Commissioner of Patents, Washington, D.C. 20231 $0.50.

Descriptors: *Acoustic arrays, *Calibration, *Patents, Hydrophones, Monitors.
Identifiers: PAT-CL-340-5-C.

The patent relates to an elongate hydrophone array simultaneously calibrated to ensure the monitoring of accurate, meaningful readings when the invention is subsequently deployed. A cylindrically-shaped wire-mesh framework serves as a support for the array and a number of tie lines secure the array on the framework in a helically extending relationship. A coaxially disposed projector of acoustic energy ensonifies the helically coiled hydrophone array and an adjacent reference hydrophone. The reference hydrophone and the hydrophone array are coupled to monitoring circuits which provide a relationship of the reference signals and the array signals to allow a calibration of the array.

17B. Communication

AD-A010 787/0GA PC$7.00/MF$2.25
Army Southeastern Signal School Fort Gordon Ga
Signal Reference Data: Radio and Radar Communications Equipment.
Special text.
1 Feb 74, 177p Rept no. USASESS-Special text-11-154-2

Descriptors: *Radio equipment, *Radar equipment, Catalogs, Information, Army equipment, Instruction manuals.

ST 11-154-2, Signal Reference Data - Radio and Radar Communications Equipment is a ready source of factual information about radio and radar communications equipment provided to support instruction conducted by the US Army Southeastern Signal School. The text includes technical data on the signal equipment used by TOE organizations and on developmental equipment.

AD-A010 800/1GA PC$4.25/MF$2.25
Mission Research Corp Santa Barbara Calif
Striation Properties Affecting Satellite Communication Systems.
Topical rept. Apr-Aug 74,
N. J. Carron. 20 Feb 75, 69p Rept no. MRC-R-154 DNA-3541T
Contract DNA001-74-C-0145

Descriptors: *Satellite communications, Striations, Radio transmission, Scintillation, Digital systems, Pulse communications, Nuclear explosion damage, Errors, Signal to noise ratio, Electron density, Statistical analysis, Military satellites, Airburst.

The report describes the effects of a striated nuclear environment on the performance of digital satellite communication systems. It discusses the theoretical propagation analysis and provides evidence to justify its applicability. Formulas for the binary bit error probabilities for three modulation techniques as a function of mean signal-to-noise ratio and signal scintillation strength are given. The parameters describing the striated environment are discussed and the important parameters that affect a digital satellite communication system are identified. The most important parameters are the path integral of the rms electron density fluctuations, the effective striation size, the overall horizontal and vertical extent of the striated environment, and the lifetime of the striated environment.

AD-A010 971/0GA PC$3.25/MF$2.25
Rand Corp Santa Monica Calif
Science on Television: Alternatives to Broadcasting,
Walter S. Baer. Jan 75, 10p Rept no. P-5305

Descriptors: *Television systems, Forecasting, Utilization, Distribution, Closed circuit television, Video recording.
Identifiers: Trends, Cable television.

The report discusses alternatives to conventional broadcast television and their usage. These developments include new microwave and satellite networks for distributing video programs, cable television, video recording and playback equipment, and closed circuit systems.

AD-A010 978/5GA PC$3.25/MF$2.25
Rand Corp Santa Monica Calif
Cabling the City: A Federal Urban Innovation,
R. K. Yin. Dec 74, 22p Rept no. P-5335

Descriptors: *Closed circuit television, Urban areas, Regulations, Commercial communications, United States Government.
Identifiers: Cable television.

The urban innovation process can be heavily controlled by federal actions. In the case of cable television, those actions have been direct and probably quite obvious. In the case of organizational changes in other services that occur within the municipal bureaucracy but are influenced by the availability of federal monies or the federal eligibility requirements for clients, the actions are not so direct and often difficult to identify. Any analysis of the urban innovation process must make a conscientious attempt to determine the federal role, if any.

AD-A011 083/3GA PC$3.75/MF$2.25
Signals Research and Development Establishment Christchurch (England)
A Computer Program for the Simulation of Store and Forward Telegraph Networks,
W. J. Cullyer, P. H. Masterman, and M. C. Butler. Oct 74, 46p Rept no. SRDE-73038 DRIC-BR-46207

Descriptors: *Telegraph systems, *Communications networks, Computerized simulation, Message processing, Switching, Great Britain.

A description is given of a means of simulating the flow of telegraph messages through a network of store-and-forward switches. Messages may be multi-address and have any one of five levels of precedence. The modelling process is carried down to the level of individual subscribers. Buffers within the switches are represented in a simple manner but no other aspects of the internal operation of switches are modelled. The output facilities are comprehensive and include gross statistics, such as median delays for each level of precedence, as well as more detailed information.

AD-916 117/5GA PC$5.25/MF$3.25
Mitre Corp., Bedford, Mass.
High Speed Digital Data Transmission on Autovon.
Technical rept.,
R. A. Culpon, C. R. Leblanc, R. L. Spitzer, and J. F. Spitzer. Nov 73, 114p MTS-2606 ESD-TR-73-283
Contract F19628-73-C-0001

Descriptors: *Data transmission systems, *Pulse communications, Digital systems, Strategic air command, Voice communications, Networks, Analog systems, Command and control systems, Modems, Errors.
Identifiers: AUTOVON, High speed digital data.

In order to characterize the performance of the AUTOVON network in support of high-speed data transmission, a series of AUTOVON tests were conducted. Data was transmitted at rates of 2.4 KB/S, 4.8 KB/S and 9.6 KB/S over randomly routed AUTOVON lines between Offutt Air Force Base, Nebraska and various SAC bases within the CONUS. The analog and digital transmission performance results from those tests are presented herein.

COM-75-10620/3GA PC$5.25/MF$2.25
Office of Telecommunications, Boulder, Colo. Policy Support Div.
Cable Television for Europe,
Sharon K. Black. Feb 74, 120p* OTR-74-28
Errata sheet inserted.

Descriptors: *Closed circuit television, Europe, Government policies, Economic factors, Decisions, Trends, Development.
Identifiers: *Cable television.

Cable television is developing in Europe in response to three primary demands: the improvement of over-the-air reception of both television and FM radio channels, the provision of increased program diversity through the reception of additional foreign and domestic signals, and the reduction of numerous unsightly antennas. However, due to the organizational structure of the separate national communications systems, the direction that this development will take will be determined by political decisions and is likely to be con-

siderably different than the development of the CATV industry in the United States. The paper explores these decisions and the technical and economic factors that affect them.

COM-75-10621/1GA PC$4.75/MF$2.25
Office of Telecommunications, Washington, D.C.
Papers on U.S. Telecommunications Technology.
Special pub.,
L. H. Adams, and P. Polishuk. May 75, 82p* OT-SP-75-3

Descriptors: *Telecommunication, Research and development, Telephone systems, Data transmission, Radio relay stations, Communication satellites, Switching.
Identifiers: Communication satellite terminals.

The document contains papers presented at technical sales seminars in Yugoslavia, Romania, and Poland covering topics such as: telecommunications research and development; telephone networks; switching; data transmission, communications, and terminals; and satellite earth terminals and navigation. Emphasis is placed on how the technology is being applied in the U.S. and how it might apply to the needs of the countries visited.

JPRS-64919 PC$8.50/MF$2.25
Joint Publications Research Service, Arlington, Va.
Communications in the Great Patriotic War,
I. T. Peresypkin. 4 Jun 75, 259p
Trans. of mono. Svyaz v Velikoi Otechestvennoi Voine, Moscow, 1973 p1-283.

Descriptors: *Communications management, *Military operations, *Warfare, Telecommunication, Military strategy, Translations, USSR.
Identifiers: World War 2.

The report contains an analysis of the organization of communications for the operations undertaken during the Great Patriotic War and the methods for organizing such communications in the tactical and strategic echelons.

NTIS/PS-75/495/2GA
PC$25.00/MF$25.00
National Technical Information Service, Springfield, Va.
Speech Recognition by Computer (A Bibliography with Abstracts).
Rept. for 1964-Jun 75,
David W. Grooms. Jun 75, 173p*
Supersedes COM-74-11435.

Descriptors: *Bibliographies, *Speech recognition, Voice communication, Linguistics, Phonology, Phonemes, Acoustic properties, Computer programming, Data processing, Artificial intelligence, Speech analysis, Compandor transmission, Waveform recognition.
Identifiers: Natural language, Speech compression, Computer applications.

The cited reports present investigations on the recognition, synthesis, and processing of speech by computer. The research includes the acoustical, photological, and linguistic processes necessary in the conversion of the various waveforms by computers. (Contains 168 abstracts).

N75-21327/2GA PC$6.25/MF$2.25
Hughes Aircraft Co., Torrance, Calif. Space Systems Div.
Study of a Low Altitude Satellite Utilizing a Data Relay Satellite System, Phase 2.
Final Report.
D. Eggert. Aug 69, 153p NASA-CR-143719, B-6560
Contract NAS5-11602

Descriptors: *Radio relay systems, *Relay satellites, *Satellite design, Data links, Orbital mechanics, Satellite attitude control, Satellite configurations, Telecommunication.

For abstract, see STAR 1313

N75-21328/0GA PC$9.50/MF$2.25
Hughes Aircraft Co., Torrance, Calif. Space Systems Div.
Study of a Low Altitude Satellite Utilizing a Data Relay Satellite System, Phase 1.
Final Report.
D. Eggert. 21 Jan 69, 326p NASA-CR-143720
Contract NAS5-11602

Descriptors: *Communication satellites, *Radio relay systems, *Satellite design, Data links, Satellite configurations, Systems engineering.

For abstract, see STAR 1313

N75-21333/0GA PC$5.25/MF$2.25
Hughes Aircraft Co., Torrance, Calif. Space Systems Div.
Multipath Study for a Low Altitude Satellite Utilizing a Data Relay Satellite System.
Final Report.
D. Eggert. Oct 70, 113p NASA-CR-143718, HUGHES-REF-B6560
Contract NAS5-11602

Descriptors: *Low altitude, *Multipath transmission, *Radio relay systems, *Spacecraft communication, Data systems, Electromagnetic radiation, Wave reflection.

For abstract, see STAR 1313

N75-21495/7GA PC$6.25/MF$2.25
Alabama Univ., University. College of Engineering.
Threshold Detection in an on-off Binary Communications Channel with Atmospheric Scintillation.
Final Report.
W. E. Webb. Jan 75, 158p NASA-CR-120737, BER-186-70
Contract NAS8-25562

Descriptors: *Atmospheric turbulence, *Optical communication, *Threshold detectors (Dosimeters), Error signals, Linear equations, Optimization, Poisson density functions, Probability theory, Signal analysis.

For abstract, see STAR 1313

N75-21496/5GA PC$7.25/MF$2.25
Jet Propulsion Lab., Calif. Inst. of Tech., Pasadena.
The Deep Space Network.
15 Apr 75, 212p NASA-CR-142646, JPL-PR-42-26
Contract NAS7-100

Descriptors: *Deep space network, *Mariner space probes, Ground support systems, Mercury spacecraft, Network synthesis, Operations research, Orbital mechanics, Trajectory control.

For abstract, see STAR 1313

N75-21497/3GA PC$8.75/MF$2.25
Washington Univ., St. Louis, Mo. Center for Development Technology.
Telecommunications Technology and Rural Education in the United States.
J. R. Perrine. Mar 75, 285p NASA-CR-142694, CDTCG-R(T)-75/1
Contract NGR-26-008-054

Descriptors: *Education, *Rural areas, *Telecommunication, Aborigines, Ats 6, Labor, Migration, Minorities, United states of america.

For abstract, see STAR 1313

N75-21499/9GA PC$7.25/MF$2.25
Carleton Univ., Ottawa (Ontario). Wired City Lab.
The Wired City Laboratory: Studies in Interactive Broadband Communications.
D. C. Coll, D. A. George, L. H. Strickland, S. A. Paterson, and P. D. Guild. 1974, 214p
Subm-Sponsored by Can. Dept. Of Commun.

Descriptors: *Simulators, *Telecommunication, *Test facilities, *Wideband communication, Data systems, Information retrieval, Problem solving, Systems analysis, Systems engineering.

For abstract, see STAR 1313

PAT-APPL-563 907/GA PC$3.25/MF$2.25
Department of the Navy Washington D C
Solid State Electronically Rotatable Raster Scan for Television Cameras.
Patent Application,
Robert L. Law. Filed 31 Mar 75, 21p Rept no.
Government-owned invention available for licensing. Copy of application available NTIS.

Descriptors: *Rasters, Patents, Solid state electronics, Image tubes, Television cameras, Rotation, Scanning.
Identifiers: *Patent applications, PAT-CL-178-5-4.

The patent application describes an electronic system which develops a rotating raster scan in synchronism with a rotating image enabling a stationary image sensor to generate video signals for producing an erect, non-rotating image at a remote location. Sine and cosine signals are synchronously developed with the rotation of the image as a function of the instantaneous angle of the rotation. The sine and cosine signals are combined with linear vertical and horizontal sawtooth deflection signals and applied to the deflection means of the stationary image sensor to produce an erect, non-rotating video image on the face of a remote cathode ray tube display.

PATENT-3 867 715 Not available NTIS
Department of the Navy Washington D C
Underwater Communications System.
Patent,
Fred G. Geil. Filed 8 Nov 73, patented 18 Feb 75, 9p Rept nos. PAT-APPL-414 012,
Government-owned invention available for licensing. Copy of patent available Commissioner of Patents, Washington, D.C. 20231 $0.50.

Descriptors: *Underwater communications, *Patents, Voice communications, Transmitting, Recording systems, Signal processing, Dual mode.
Identifiers: PAT-CL-340-5-T.

The patent describes communication method and system for use in reverberant environments. It includes a transmission of the real time communication message followed by a transmission of the same message recorded and processed to occupy a longer period of time and to have an inverted time sequence order.

PATENT-3 875 332 Not available NTIS
National Aeronautics and Space Administration. Lyndon B. Johnson Space Center, Houston, Tex.
Digital Transmitter for Data Bus Communications System.
Patent.
G. E. Proch. Patented 1 Apr 75, 8p PAT-APPL-428 994
Misc-Filed 27 Dec. 1973 Supersedes N74-17888 (12 - 09, p 1023). Subm-Sponsored by NASA.

Government-owned invention available for licensing. Copy of patent available from Commissioner of Patents, Washington, D.C. 20231 $.50.

Descriptors: *Digital systems, *Pulse code modulation, *Signal transmission, *Transmitters, Logic circuits, *Patents, Transistors, Transmission lines.
Identifiers: PAT-CL-178-58-A.

An improved digital transmitter for transmitting serial pulse code modulation (pcm) data at high bit rates over a transmission line is disclosed. When not transmitting, the transmitter features a high output impedance which prevents the transmitter from loading the transmission line. The pcm input is supplied to a logic control circuit which produces two discrete logic level signals which are supplied to an amplifier. The amplifier, which is transformer coupled to the output isolation circuitry, converts the discrete logic level signals to two high current level, ground isolated signals in the secondary windings of the coupling transformer. The latter signals are employed as inputs to the isolation circuitry which includes two series transistor pairs operating into a hybrid transformer functioning to isolate the transmitter circuitry from the transmission line.

PATENT-3 875 584 Not available NTIS
National Aeronautics and Space Administration. Lyndon B. Johnson Space Center, Houston, Tex.
Television Noise Reduction Device.
Patent.
B. L. Gordon, and J. C. Stamps. Patented 1 Apr 75, 6p PAT-APPL-407 323
Misc-Filed 17 Oct. 1973. Subm-Sponsored by NASA.
Government-owned invention available for licensing. Copy of patent available from Commissioner of Patents, Washington, D.C. 20231 $.50.

Descriptors: *Noise reduction, *Signal processing, *Television transmission, Color television, *Patents, Video data.
Identifiers: PAT-CL-358-36.

A noise reduction system that divides the color video signal into its luminance and chrominance components is reported. The luminance component of a given frame is summed with the luminance component of at least one preceding frame which was stored on a disc recorder. The summation is carried out so as to achieve a signal amplitude equivalent to that of the original signal. The averaged luminance signal is then recombined with the chrominance signal to achieve a noise-reduced television signal.

PB-241 628/7GA
Mag Tape $150.00;Foreign $190.00
Federal Communications Commission, Washington, D.C. Research and Standards Div.
FCC Coordination Contour Program for Domestic Satellite Earth Stations.
Software,
J. M. Linthicum. Nov 74, 1 reel mag tape
FCC/OCE/RS74-05 FCC/DF-74/024
Specify tape recording mode desired: 9 track, 800 or 1600 bpi, odd parity, EBCDIC; or 7 track, 556 or 800 bpi, odd or even parity, BCD. Also available as punched cards. Price includes User's Guide, PB-240 199.

Descriptors: *Software, *Radio relay stations, *Computer programs, Communication satellites, Radio relay systems, Coordination, FORTRAN, Magnetic tapes.
Identifiers: *Communication satellite terminals.

This is a computer program for the calculation of the coordination contour around an international or domestic satellite earth station. It is a modification of a program written by the Department of Commerce, Office of Telecommunications, with modifications to meet the needs of users throughout the telecommunications industry. The program is a computerization of the procedure outlined in Appendix 28 of the Final Acts of the World Administrative Radio Conference for Space Telecommunications (WARC-ST), which regulates the international coordination of an earth station, and of the similar procedure outlined in Part 25 of the FCC Rules and Regulations, which regulates the domestic coordination of an earth station ... Software description: This program was written in the FORTRAN V programming language for initial implementation on a UNIVAC 1106 computer using the EXEC 8 operating system. It requires less than 50k words of core memory for use on the UNIVAC 1106. It consists of one main program, nine subroutines and three functions.

PB-241 631/1GA PC$4.75/MF$2.25
System Planning Corp., Arlington, Va.
Extension of Cross-Subsidy Model. Interim Report.
Research note,
Tucker Battle, James Finucane, and Bruce MacDonald. 13 Dec 74, 76p RN-196 OTP-75/001
Contract C-4-35591

Descriptors: *Telecommunication, *Economic models, Nonlinear programming, Standards, Algorithms, Surpluses, Cost analysis, Optimization, Cost functions, Demand models.
Identifiers: Sequential unconstrained minimization technique.

The purposes of this report are: (1) to extend the total surplus methodology to include explicitly cross elastic demands; (2) to select algorithms for solving the kinds of nonlinear programming problems which arise in the total surplus formulation; and (3) to review appropriate sources to determine standards of modeling the engineering economic aspects of the interstate telecommunications system, and to assess the availability of data.

PB-241 871/3GA PC$7.50/MF$2.25
University of Southern California, Los Angeles.
Telecommunications-Transportation Tradeoffs.
Final rept. 1 Jul 73-31 Dec 74,
Jack M. Nilles, Frederick R. Carlson, Paul Gray, and Gerhard Hanneman. Dec 74, 237p
NSF/RA/S-74-020
Grant NSF-GI-39019

Descriptors: *Telecommunication, *Urban transportation, Audio frequencies, Networks, Computers, Computer systems programs, Mathematical models, Benefit cost analysis, Industries, Motivation, Decentralization(Dispersion), Urban areas.

The report evaluates the implications of potential communications and computer technology alternatives to urban transportation, particularly the commute to work. Three criteria for successful telecommunications alternatives to transportation were used to evaluate the feasibility of 'telecommuting' in various situations. These criteria are: (1) economic benefits, (2) adequate technological base, (3) semantic and psychological effectiveness. Emphasis was placed on the utility of telecommuting in the information industry. The study concluded that existing and near term technologies provide a suitable economic basis for allowing organizations to decentralize using telecommuting. Potential impacts on energy consumption, transportation and urban development are discussed.

PB-241 885/3GA PC$5.25/MF$2.25
Johns Hopkins Univ., Baltimore, Md. Center for Metropolitan Planning and Research.
Hopkins Cable Project. Volume I. The Economics of Cable Television in Urban Markets: Baltimore City.
Interim rept.,
Katharine C. Lyall, Charles Frederick DeKay, Ronald A. Duncan, John W. Gerster, and Mark McConnell. Feb 75, 113p NSF-RA/S-74-021
Grant NSF-GI-39847
See also Volume 2, PB-241 886.

Descriptors: *Closed circuit television, Urban areas, Economic analysis, Municipal engineering, Economic models, Maryland.
Identifiers: Baltimore(Maryland), *Cable television.

Volume I contains a description of the Hopkins Cable Model and a report of results of its application to data for Baltimore City cable market. Estimates of full costs, revenues, and expected value of franchise are provided in a set of annual financial statements including balance sheet, income statement, cash flow statement, and system characteristics chart. Analysis of results reveals in negative present value of the franchise under existing Federal regulations restricting signal importation. Losses stem from low expected penetration rates in combination with substantially higher construction costs in urban areas.

PB-241 886/1GA PC$6.25/MF$2.25
Johns Hopkins Univ., Baltimore, Md. Center for Metropolitan Planning and Research.
Hopkins Cable Project. Volume II. Municipal Service Applications of Cable for Baltimore City.
Interim rept.,
Katharine C. Lyall, Ronald A. Duncan, Jonathan Alpert, John W. Gerster, and Mark McConnell. Dec 74, 161p NSF-RA/S-74-021A
Grant NSF-GI-39847
See also Volume 1, PB-241 885.

Descriptors: *Closed circuit television, Urban areas, Benefit cost analysis, Municipal engineering, Services, Utilization, Maryland.
Identifiers: Baltimore(Maryland), *Cable television.

Volume II contains benefit-cost evaluations of selected applications of cable television to municipal service delivery in the fields of: fire protection, health, education, and social services and housing. For each application, the cost-effectiveness of cable was compared to that of alternative technologies including traditional service procedures. A number of non-trivial applications were found totalling about $200,000 in annual net public benefits. A number of other applications were excluded because they provided essentially private benefits at public cost, could only be acquired after large additional capital investment from public funds, or represented essentially pecuniary benefits from undercutting monopoly rates of other communictions media.

17E. Infrared and Ultraviolet Detection

AD-A010 648/4GA PC$3.75/MF$2.25
Commercial Electronics Inc Mountain View Calif
Modification of AN/GAQ-1 Alarm Set.
Final comprehensive rept. Feb-Oct 74,
C. P. Irwin. Mar 75, 31p ED-CR-75008
Contract DAAA15-74-C-0143

Descriptors: *Warning systems, Modification, Infrared equipment.
Identifiers: AN/GAQ-1.

In order to prepare the AN/GAQ-1 Alarm Set for Government Design Test and Evaluation (DTE), it was necessary to redesign the alignment mechanism, thoroughly test each system, and

procure certain spare parts, including glower assemblies and chopper motors. Once these tasks were completed, the DTE was carried out. Technical personnel were provided to support the DTE. It is concluded that these tasks were successfully completed, since AN/GAQ-1 did undergo a successful DTE at DPG. It is recommended, however, that the entire electronic system design should be re-examined to take into account, great advances in semi-conductor technology since the existing system was designed. Addition of an alignment telescope also is recommended.

AD-A011 053/6GA PC$3.25/MF$2.25
Naval Air Development Center Warminster Pa Crew Systems Dept
Laboratory Assessment of the AN/PVS-5 Night Vision Goggle.
Phase rept.,
Gloria T. Chisum, and Phyllis E. Morway. 19 Mar 75, 22p Rept no. NADC-75006-40

Descriptors: *Infrared binoculars, *Night vision devices, Goggles, Low light levels, Image intensifiers(Electronics).
Identifiers: AN/PVS-5.

Laboratory assessment of the AN/PVS-5 Night Vision Goggle was conducted. Visual fields, goggle infrared source, useable range, and detectability of targets with the goggle were measured. Illumination levels of -5.4 and -6.22 log foot candles were adequate for 90 percent detection of 0.14 and 0.07 acuity targets respectively. Calculations of distances at which various surface and airborne targets subtended comparable visual angles and tables of natural brightness conditions are presented to permit translation of laboratory values into field conditions. While further field evaluation is anticipated, the laboratory assessment indicates that the goggle can significantly facilitate aircrew night visual performance.

COM-75-50323/5GA Not available NTIS
National Bureau of Standards, Washington, D.C.
Absolute Radiometric Calibration of Detectors Between 200-600A.
Final rept.,
Edward B. Saloman, and D. L. Ederer. Apr 75, 6p
Pub. in Applied Optics, v14 n4 p1029-1034 Apr 75.

Descriptors: *Ultraviolet detectors, *Calibrating, Far ultraviolet radiation, Radiometry, Surfaces, Aluminum, Aluminum oxide, Standards, Ionization chamber, Rare gases.
Identifiers: Reprints.

Radiometric transfer standards consisting of windowless diodes with cathodes made of anodized aluminum oxide on aluminum are now available from the National Bureau of Standards with calibrations in the 200-600-A wavelength range. This extends the previously existing range of calibration for these diodes (600-1200A). For wavelengths shorter than 600A, synchrotron radiation at NBS-SURF is used as the source of radiant energy. A noble gas double ionization chamber is used to calibrate a secondary standard diode that is then intercompared with the transfer standards. Monitors take into account variations in the intensity of synchrotron radiation and in beam position. Methods of accounting for the effects of second-order radiation in the incident flux and secondary ionization in the double ionization chamber are discussed.

PAT-APPL-575 769/GA PC$3.25/MF$2.25
Department of the Navy Washington D C
Tunable Electroabsorptive Detector.
Patent Application,
Nicholas Bottka. Filed 8 May 75, 10p Rept no.

Government-owned invention available for licensing. Copy of application available NTIS.

Descriptors: *Infrared detectors, Tuning devices, Electrooptics, Frequency modulation, Optical communications, Patents.
Identifiers: *Patent applications, PAT-CL-350-160, Optical modulators.

The patent application concerns a tunable, electroabsorptive, semiconductor detector or detector-modulator for detecting or modulating radiation near the absorptive edge of the detector, which edge can be tunably shifted by back biasing.

17F. Magnetic Detection

PB-242 015/6GA PC$3.25/MF$2.25
National Inst. of Law Enforcement and Criminal Justice, Washington, D.C.
Hand-Held Metal Detectors for Use in Weapons Detection-Law Enforcement Standards Program.
Oct 74, 17p NILE/CJ-STD-0602.00
Paper copy also available from GPO as SN-2700-00285.

Descriptors: *Magnetic detection, *Guns(Ordnance), Small arms, Warning systems, Standards, Requirements, Acceptability, Performance, Specifications, Law enforcement, Police, Calibrating.
Identifiers: Gun control, Metal detectors.

The law enforcement equipment standard was developed by the law Enforcement Standards Laboratory of the Department of Justice. Meeting the performance requirements presented in this document identifies equipment that is of superior quality and that is suited to the needs of law enforcement agencies. Purchasing agents can use the test methods described in this standard to determine firsthand whether a particular equipment item meets the requirements of the standard, or they may have the tests conducted on their behalf by a qualified testing laboratory. Law enforcement personnel may also reference this standard in purchase documents and require that any equipment offered for purchase meet its requirements. Furthermore, they may require that this compliance be either guaranteed by the vendor or attested to by an independent testing laboratory. The performance requirements and associated test methods cited include: controls; audible and visual alarm indication; detection, operability and electrical characteristics; battery condition and life; and interference and electrical safety.

17G. Navigation and Guidance

AD-A010 594/0GA PC$4.75/MF$2.25
Facility Checking Squadron (1866th) (Afcs) Richards-Gebaur AFB Mo
Radar Station Evaluation Report: Cannon AFB, New Mexico,
David E. Smith. 29 Apr 75, 99p Rept no. 74/66R-30

Descriptors: *Radar stations, *Airport radar systems, Air traffic control systems, Search radar, Radar beacons, Approach, Performance(Engineering), Air Force facilities, New Mexico.
Identifiers: AN/FPN-47, AN/TPX-42, AN/FPN-16, Evaluation, Cannon Air Force Base.

The Traffic Control and Landing System (TRACALS) radar station evaluation report presents data collected to define the capabilities and limitations of the Radar Approach Control (RAPCON) facility located at Cannon AFB, NM. The evaluation period was 6-16 Dec 74. The Cannon facility is comprised of an AN/FPN-47 (Airport Surveillance Radar), AN/TPX-42 (Air Traffic Control Radar Beacon System), AN/FPN-16 (Precision Approach Radar), and associated power systems. Evaluation results have assessed that the ASR does not satisfy mission requirements with the commissioned ASR antenna tilt of 4.0 degrees. ATCRBS false targets were numerous and apparently caused by reflections from hangars. Also, PAR service to runway 21 is hampered by the presentation of trains on the azimuth and elevation scopes. Included in this report are performance predictions and ananalysis of flight performance data.

AD-A010 707/8GA PC$4.75/MF$2.25
Coast Guard Research and Development Center Groton Conn
Instrumentation of Maumee Bay Light No. 30 for Ice Force Measurement.
Final rept.,
J. P. Welsh, and E. J. Anderson. Oct 74, 77p Rept no. CGR/DC-27-74 USCG-D-82-75

Descriptors: *Navigational aids, *Structural engineering, Navigational lights, Ice, Loads(Forces), Force(Mechanics), Structures, Instrumentation, Measurement, Force levels.
Identifiers: DOT/4IZ/ID.

Maumee Bay Light No. 30, Toledo, Ohio, was instrumented to obtain measurements of ice force on the structure. Measurements were obtained for a period of eighty hours during January 1974 when ice was present in the vicinity of the structure. Impulse force levels as high as 4.5 g's with repetition rates of 70 per minute for periods ranging from several minutes to several hours were observed.

AD-A010 709/4GA PC$3.25/MF$2.25
Coast Guard Research and Development Center Groton Conn
Evaluation of LLLTV and Other Visual Surveillance Techniques for VTS Applications.
Final rept.,
Douglas W. Kay. Jan 75, 18p Rept no. CGR/DC-3/75 USCG-D-43-75

Descriptors: *Water traffic, *Visual surveillance, Low light levels, Television systems, Monitoring, Television cameras, Infrared surveillance, Lasers, Target recognition.
Identifiers: *Vessel traffic systems, DOT/4IZ/ID.

The Coast Guard Vessel Traffic System (VTS) monitors the flow of vessel traffic within certain harbors and waterways. The addition of visual surveillance to the existing radar and radio communication VTS capability had been proposed. To determine the effectiveness of visual surveillance in a harbor environment an ISIT type low light level television (LLLTV) camera system was evaluated at the R and D Center for this application. Also, other alternative visual surveillance systems were briefly considered, including SIT and intensified isocon type LLLTVs, laser-gated TV, and forward looking infrared (FLIR). It was concluded that restricted visibility, limited resolution of TV imagery, and the presence of many intense light sources in the field of view at night makes visual surveillance impractical in a harbor environment by rendering it least useful when surveillance is most needed.

AD-A010 779/7GA PC$3.75/MF$2.25
National Aviation Facilities Experimental Center Atlantic City N J
Color Display Evaluation for Air Traffic Control.
Final rept. Jan-Aug 74,
Donald W. Connolly, Gerard Spanier, and Florence Champion. May 75, 49p Rept no. FAA-NA-74-54 FAA-RD-75-39

Descriptors: *Air traffic control systems, *Human factors engineering, *Color vision, *Cathode ray tubes, Display systems, Air traffic

controllers, Feasibility studies, Colors, Visual perception, Information systems, Performance, Radar equipment.
Identifiers: DOT/4IZ/ID.

The goals of these tests and analyses were to evaluate the potential operational utility and the technical capability of color cathode-ray displays for air traffic control (ATC) purposes. Color illustrations reproduced in black and white.

AD-A011 036/1GA PC$4.25/MF$2.25
Naval Research Lab Washington D C
A Fortran Computer Program for Computing the Great Circle Acoustic Path in the Ocean from a Signal Source to a Hydrophone Site and Plotting It on a Mercator Chart.
Final rept. 26 Apr 72-Nov 74 on Phase 1,
Leon P. LaLumiere, Jr. 23 May 75, 57p Rept no. NRL-7881

Descriptors: *Underwater navigation, *Position finding, *Underwater sound signals, Computer programs, Paths, Circular, FORTRAN, Plotting, Charts.
Identifiers: FRACZONE computer program.

FRACZONE is a FORTRAN program designed to compute the spherical triangular acoustic reception zones based on empirical data and plot these zones on one or more Mercator charts.

AD-A011 088/2GA PC$6.25/MF$2.25
Federal Aviation Administration Washington D C Systems Research and Development Service
SRDS Technical Program Document, Fiscal Year 1976 Engineering and Development Approved Programs.
Jul 75, 152p
See also report dated Jul 74, AD-781 358.

Descriptors: *Air traffic control systems, *Air transportation, *Civil aviation, Systems engineering, Radar, Radar beacons, Navigation, Communication and radio systems, Landing aids, Aviation safety, Weather, Airports, Research management, Planning.
Identifiers: DOT/4IZ/ID.

The technical program document (TPD) contains research and technology resumes which reflect Systems Research and Development Service, Federal Aviation Administration, approved subprograms. These resumes identify the technical objective, approach, milestones scheduled for accomplishment, accomplishments, requirements, etc.

JPRS-64765 PC$4.75/MF$2.25
Joint Publications Research Service, Arlington, Va.
Probability Methods in the Applied Theory of Gyroscopes,
A. A. Sveshnikov, and S. S. Rivkin. 14 May 75, 88p
Trans. of mono. Veroyatnostnye Metody v Prikladnoi Teorii Giroskopov, Moscow, 1974 p401-471.

Descriptors: *Gyroscopes, *Probability theory, Gyrostabilizers, Gyrocompasses, Inertial navigation, Mechanical tests, Translations, USSR.

The report contains data on the investigation of complex gyroscopic devices and on the processing of test results on gyroscopic devices.

JPRS-64926 PC$5.25/MF$2.25
Joint Publications Research Service, Arlington, Va.
Gyroscopic Systems and Instruments of Precision Mechanics,
V. A. Karakashev. 5 Jun 75, 108p
Trans. from Priborostroenie (USSR) n12 1974, n13 1975.

Descriptors: *Gyroscopes, *Accelerometers, Gyro compasses, Celestial navigation, Inertial navigation, Stabilized platforms, Translations, USSR.

The report contains a description of gyroscopic systems and instruments of precision mechanics.

NTIS/PS-75/521/5GA
PC$25.00/MF$25.00
National Technical Information Service, Springfield, Va.
Air Traffic Control Simulation Models (A Bibliography with Abstracts).
Rept. for 1964-Jun 75,
Guy E. Habercom, Jr. Jun 75, 190p*
Supersedes COM-74-10919.

Descriptors: *Bibliographies, *Air traffic control, *Computerized simulation, Air transportation, Air routes, Air route traffic control, Collision avoidance, Navigational aids, Radar beacons, Navigation satellites, Mathematical models, Computerized simulation.

En route and terminal air traffic control facilities are investigated by use of mathematical models and computerized simulations. Ground based and satellite navigational aids are modeled for present and predicted air traffic requirements. World wide networks for traffic scheduling are simulated. (Contains 185 abstracts).

N75-22157/2GA PC$4.25/MF$2.25
Virginia Univ., Charlottesville. School of Engineering and Applied Science.
Processor Architectures Utilizing Magnetic Bubble and Semi-Conductor Memories.
Interim Report.
E. A. Parrish, Jr., and J. H. Aylor. Apr 75, 63p
NASA-CR-142673, EE-4027-102-75
Grant NSG-1067

Descriptors: *Central processing units, *Computer techniques, *Control boards, *Omega navigation system, Circuit diagrams, Computer programs, Computer systems programs, Data systems, Experimental design, Flow charts.

For abstract, see STAR 1313

17H. Optical Detection

AD-A010 926/4GA PC$3.25/MF$2.25
Lear Siegler Inc Santa Monica Calif Astronics Div
Laser Radar Development.
Final rept.,
28 Feb 69, 24p Rept no. ADR-736
Contract N00014-66-C-0157

Descriptors: *Optical radar, Oceanography, Range gating, Search radar, Performance tests, Q switching, Ruby lasers, Neodymium lasers, Doping, Image processing, Test equipment, Cameras, Infrared lasers, Yttrium compounds, Aluminates, Yttrium aluminum garnet, Pulsed lasers.
Identifiers: Design, Q switched lasers, Neodymium glass lasers, YAG lasers.

The objective of this program was to develop a laser radar system applicable to the problem of detection at sea, and the mission of search and locate. The program included the following phases: The construction, test, and evaluation of a range-gated imaging system (RGI-Mod I) consisting of a three- or four-joule Q-switched laser and gated image intensifier system; Field testing of the RGI-Mod I system at the Chesapeake Bay Naval Research Laboratory to determine the effects of whitecap sea conditions on the system operation; The development of a high average power-pulsed solid-state laser that could be used in range-gated or plan position-indicating optical radar. The investigation included cooling of both the inside and outside of a cored cylindrical laser rod as well as studies involving ruby, neodymium doped glass and neodymium doped YAG.

17I. Radar Detection

AD-A011 037/9GA PC$3.25/MF$2.25
Naval Research Lab Washington D C
Sampling Wideband Nonrepetitive Radar Signals.
Interim rept. on phase 1,
A. M. Findlay, and E. Ornstein. 21 May 75, 24p Rept no. NRL-7859

Descriptors: *Radar signals, *Sampling, Broadband, Analog to digital converters, Hybrid systems, Signal processing, Monopulse radar.

Serial sampling of wideband radar signals in the manner of a sampling oscilloscope will provide inaccurate results to the extent that the signal is changing during the course of the sampling process. An ideal but expensive solution to the problem is parallel sampling. A compromise approach is parallel-serial sampling, which combines the two techniques. A parallel-serial sampling system was developed at NRL and operates as part of the High Range Resolution Monopulse (HRRM) Radar.

AD-A011 056/9GA PC$5.25/MF$2.25
Harris Corp Melbourne Fla Electronic Systems Div
Multiple Target Instrumentation Radar Study.
Final rept. on Phase 2,
Duane E. Bowyer. 30 Apr 75, 122p
Contract N00014-75-C-0033
See also report dated 10 Mar 75, AD/A-006 925.

Descriptors: *Radar, Phased arrays, Multiple operation, Instrumentation, Computerized simulation, Computer programs, Ranges(Facilities).

The objective of the study was to develop the logic for the Radar Operating Procedure (ROP), and implement a system simulation to verify the effectiveness of the design. In addition a data processor hardware configuration was proposed and real-time software timing results obtained.

LA-UR-74-1779 PC$4.00/MF$2.25
Los Alamos Scientific Lab., N.Mex.
Adaptive Control Techniques for on-Axis Radars.
E. P. Schelonka. 1975, 7p CONF-750417-1
Contract W-7405-ENG-36

Descriptors: (*Radar, *Control), Accuracy, Antennas, Digital systems, Performance, Targets.

For abstract, see NSA 31 12, number 35720.

17J. Seismic Detection

AD-A010 586/6GA PC$3.25/MF$2.25
Royal Norwegian Council for Scientific and Industrial Research Kjeller
Progress Report NORSAR Phase 3.
Quarterly no. 1,
K. A. Berteussen. 11 Apr 75, 25p
Contract F08606-74-C-0049, ARPA Order-2551
See also Quarterly progress rept. no. 3, AD-A005 775.

Descriptors: *Seismic detection, *Underground explosions, Seismic arrays, Earthquakes, Nuclear explosions, Seismological stations,

Earth mantle, Seismic waves, Scattering, Operation, Maintenance.
Identifiers: *Vela Uniform, Norwegian seismic array.

The report covers operation and research activities at the Norwegian Seismic Array (NORSAR) in the period 1 January-31 March 1975. Both for the field and data center installations this has been a stable period. Two studies of scattering in the crust and upper mantle and one study of scattering in the mantle-core boundary have been finished. A Kirnos verticle broadband instrument has been operated at the subarray 04B over a period of about nine months, and the results from this project are now available.

AD-A010 734/2GA PC$3.25/MF$2.25
Teledyne Geotech Alexandria Va Seismic Data Analysis Center
Quarterly Technical Summary Report, January-March 1975.
Progress rept.,
R. A. Hartenberger. 15 Apr 75, 17p Rept no. SDAC-TR-75-5
Contract F08606-74-C-0006, ARPA Order-1620
See also report dated 15 Jan 75, AD-A009 334.

Descriptors: *Seismic detection, *Underground explosions, *Data processing, Earthquakes, Seismological stations, Nuclear explosions, Signal to noise ratio, Power spectra, Signal processing, Montana, Norway.
Identifiers: Vela Uniform, Large aperture seismic array, Rio Blanco Shot, Seismic discrimination.

Contents:
- Average P and PKP codas for earthquakes (103-118 degrees);
- Seismic threshold determinations;
- The effects of reduced configurations at LASA on detection signal-to-noise ratios;
- Analysis of seismic data of the Rio Blanco explosion;
- An examination of some new and classical short-period discriminants;
- Seismic threshold determination;
- An iterative approximation to the mixed-signal processor.

18. NUCLEAR SCIENCES AND TECHNOLOGY

18A. Fusion Devices (Thermonuclear)

EUR-5064e PC$26.25/MF$2.25
Commission of the European Communities, Luxembourg.
International School of Plasma Physics, Varenna on Lake COMO, Italy, September 27--October 9, 1971. Course on Instabilities and Confinement in Toroidal Plasmas.
Nov 74, 474p
U.S. Sales Only.

Descriptors: (*Plasma, *Meetings), (*Thermonuclear reactors, Meetings), Leading abstract.

For abstract, see NSA 31 12, number 32754.

IPP-2/226 PC$7.00/MF$2.25
Max-Planck-Institut fuer Plasmaphysik, Garching/Muenchen (F.R. Germany).
Wega Parameter Calculations in Equilibrium.
H. D. Pacher. Jan 75, 79p
U.S. Sales Only.

Descriptors: (*Wega stellarator, *Energy balance), Electron temperature, Equilibrium plasma, Impurities, Ion temperature, Joule heating.

For abstract, see NSA 31 12, number 32758.

IPP-9/18 PC$4.50/MF$2.25
Max-Planck-Institut fuer Plasmaphysik, Garching/Muenchen (F.R. Germany).
Energy Distributions of Charged and Neutral Hydrogen Atoms Backscattered from Metal Surfaces Bombarded with 5 to 18 Kev Protons.
P. Meischner, and H. Verbeek. Jan 75, 30p
U.S. Sales Only.

Descriptors: (*Thermonuclear reactor walls, *Physical radiation effects), (*Beryllium, *Proton reactions), (*Vanadium, Proton reactions), (*Stainless steels, Proton reactions), Mev range 10-100, Molybdenum, Niobium, Tantalum.

For abstract, see NSA 31 12, number 32759.

LA-UR-75-257 PC$4.00/MF$2.25
Los Alamos Scientific Lab., N.Mex.
Hf Chemical Lasers.
R. J. Jensen. 1974, 20p CONF-750110-3
Contract W-7405-eng-36

Descriptors: (*Chemical lasers, *Design), Hydrofluoric acid, Operation, Performance, Plasma production.

For abstract, see NSA 31 12, number 32762.

ORNL-TM-4853 PC$7.50/MF$2.25
Oak Ridge National Lab., Tenn.
Tokamak Experimental Power Reactor: Basic Considerations and Initiation of Studies at Oak Ridge.
P. N. Haubenreich. Apr 75, 88p
Contract W-7405-eng-26

Descriptors: (*Tokamak devices, *Design), Breeding blankets, Engineering, Fabrication, Management, Planning, Tritium.

For abstract, see NSA 31 12, number 32763.

18C. Nuclear Explosions

AD-A010 828/2GA PC$5.75/MF$2.25
Defense Nuclear Agency Washington D C
Proceedings of Conference on Applications of Chemistry to Nuclear Weapons Effects (2nd). Held on 12-14 September 1972. Abstracts of Papers,
Charles A. Blank. 23 Dec 74, 143p Rept no. DNA-3090P

Descriptors: *Nuclear fireball, *Atmospheric chemistry, Stratosphere, Troposphere, Ionosphere, Meetings, Scientific research, Abstracts, Nuclear explosions, Atmosphere models, Ions, Gas ionization, Reaction kinetics.
Identifiers: *Nuclear explosion effects, Metal oxides, Chemical release studies.

This document contains unclassified, brief preface, conference agenda and schedule, abstracts, and overall summary addendum of papers submitted and accepted for Hq DNA-sponsored 'Second Conference on Applications of Chemistry to Nuclear Weapons Effects'. Session titles include: Low altitude fireball entrainment and chemistry; Nuclear burst effects from the troposphere to the D-region; Nuclear burst effects in the D- and E-regions; Nuclear bursts effects in the E- and F-regions; Atmospheric dynamics; Properties of the ionosphere; Charged particle reaction rates; Computer code development; Neutral atmospheres including optical emissions; Air emission and quenching rates; Metal oxides energies and reaction rates; Metal releases.

AD-A011 049/4GA PC$3.75/MF$2.25
Naval Research Lab Washington D C
Advection of Artificially Produced Upper Atmospheric Clouds in Empirically Determined Wind Fields.
Memorandum rept.,
S. T. Zalesak, and T. P. Coffey. Apr 75, 30p Rept no. NRL-MR-3046

Descriptors: *Nuclear clouds, *Atmospheric motion, Airburst, Advection, Wind direction, Periodic variations, Wind shear, Atmosphere models, computer applications.

The present work is part of an effort to develop a complete and accurate model for the three-dimensional motion of radioactive nuclear weapon debris released in the earth's atmosphere at altitudes from 25 km to 130 km. The time development of passive cloud surfaces in a empirically derived seasonally dependent mean zonal and meridional wind field is followed using a very simple advection code. Zonal wind fields are based on Groves' CIRA 1972 model and meridional fields are based on a 1969 paper by the same author. Both models are fits to extensive experimental data, time averaged over one-month time intervals. Test runs are presented, showing the effects of releasing the cloud during different months and at different points over the earth.

AD-A011 100/5GA PC$5.75/MF$2.25
Mission Research Corp Santa Barbara Calif
Similarity Solutions and Blast Wave Phenomena.
Topical rept. 1 Nov 73-30 Sep 74,
G. McCartor, and W. R. Wortman. 26 Mar 75, 129p Rept no. MRC-R-149 DNA-3589T
Contract DNA001-74-C-0135

Descriptors: *Nuclear explosions, *Blast waves, Nuclear fireball, Vortices, Pressure, Velocity, Flow fields.
Identifiers: *Similarity solutions, *Air burst.

In this report three problems are solved. First, the problem of a strong blast wave in a homogeneous medium including radiative effects is solved. Second, the problem of a strong blast wave in a slightly inhomogeneous medium including the radiative effects is solved. Finally, these results are used to construct the fireball configuration at pressure equilibrium time. An analysis of the expected errors and the range of applicability is given, along with a discussion of possible applications of the results to the study of fireball phenomenology and its application to military systems analysis.

LA-5764-MS PC$33.50/MF$2.25
Los Alamos Scientific Lab., N.Mex.
Pacer Program. Fy 1974 Lasl Activity. References.
R. G. Shreffler. Jan 75, 608p
Contract W-7405-eng-36

Descriptors: (*Thermonuclear explosions, *Uses), (*Thermal power plants, *Research programs), (*Electric power, *Production), Cavities, Salt deposits, Underground explosions.

For abstract, see NSA 31 12, number 32985.

UCID-16722 PC$4.00/MF$2.25
California Univ., Livermore Lawrence Livermore Lab.
Permeability of a Nuclear Chimney and Surface Alluvium, Area 2, Erda Nts.
R. Rozsa, D. Snoeberger, and J. Baker. 10 Mar 75, 13p
Contract W-7405-Eng-48

Descriptors: (*Nuclear explosions, Chimneys), (*Chimneys, *Permeability), Alluvial deposits, Nevada test site, Surfaces, Tuff, Underground explosions.

For abstract, see NSA 31 12, number 32987.

18D. Nuclear Instrumentation

LBL-3343 PC$4.00/MF$2.25
California Univ., Berkeley Lawrence Berkeley Lab.
Spark Chamber Neutron and Proton Spectrometer: First Report on Performances.
K. Mamont-Ciesla, and A. Rindi. 17 Dec 74, 15p
Contract W-7405-eng-48

Descriptors: (*Neutron spectrometers, Shower counters), (*Proton spectrometers, Shower counters), (*Shower counters, *Spark chambers), Mev range 10-100, Mev range 100-1000, Performance, Spectra unfolding.

For abstract, see NSA 31 12, number 33264.

PB-241 732/7GA PC$3.25/MF$2.25
Woods Hole Oceanographic Institution, Mass.
Assembly, Operation and Performance Details of a 10-Input Alpha Spectrometry System.
Technical rept.,
Don R. Mann, Hugh D. Livingston, and Allan G. Gordon. Apr 75, 21p WHOI-75-26

Descriptors: *Fallout, *Alpha spectra, *Proton spectrometers, Transuranium elements, Alpha particles.

An account is given of the assembly, operation and performance of a 10-detector alpha spectrometer system which is being used for the low-level detection of low level environmental alpha-emitting radionuclides -- especially those in the transuranic family. Precautions necessary to the maintenance of the low background characteristics of the surface barrier detectors are described. Factors which affect system resolution are reviewed.

RL-74-070 PC$8.25/MF$2.25
Science Research Council, Chilton (UK). Rutherford Lab.
Crystal Programmers' Guide.
W. S. Chapman, R. Bairstow, and R. Hatley. Sep 74, 105p
U.S. Sales Only.

Descriptors: (*Bubble chambers, *Data processing), (*Computer codes, *C codes), Image scanners, Images, Manuals, Particle tracks, Pdp computers, Photographic films, Programming.

For abstract, see NSA 31 12, number 33265.

18E. Nuclear Power Plants

AECL-4760 PC$5.75/MF$2.25
Atomic Energy of Canada Ltd., Pinawa, Manitoba. Whiteshell Nuclear Research Establishment.
Hydrogen Distribution in a Zirconium Sheath with a Gas Plenum.
A. Sawatzky. Jan 75, 55p
U.S. Sales Only.

Descriptors: (*Wr-1 reactor, *Fuel cans), (*Zirconium, *Hydridation), Failures, Fuel elements, Performance, Reactor operation, Uranium carbides.

For abstract, see NSA 31 12, number 35185.

AECL-4763 PC$9.00/MF$2.25
Atomic Energy of Canada Ltd., Pinawa, Manitoba. Whiteshell Nuclear Research Establishment.
Wr-1 Reactor: A General Description.
D. G. Turner. Nov 74, 118p
U.S. Sales Only.

Descriptors: (*Wr-1 reactor, *Specifications), Design, Reactor components, Reactor kinetics.

For abstract, see NSA 31 12, number 35186.

ANL-CT-75-33 PC$7.00/MF$2.25
Argonne National Lab., Ill.
Dynamic Transient Analysis of Rupture Disks.
B. J. Hsieh. Feb 75, 80p

Descriptors: (*Lmfbr type reactors, Steam generators), (*Steam generators, *Pressure release), Configuration, Performance, Ruptures, Safety engineering, Stresses.

For abstract, see NSA 31 12, number 35166.

ANL-Trans-978 PC$4.00/MF$2.25
Gosudarstvennyj Komitet po Ispol'zovaniyu Atomnoj Ehnergii SSSR, Obninsk. Fiziko-Ehnergeticheskij Inst.
Calculations of the Characteristics of "Standard" Fast Reactor.
L. P. Abagyan, M. A. Baryba, L. V. Petrova, and M. M. Savos'kin. 1974, 13p
Translation of FEI--525.

Descriptors: (*Lmfbr type reactors, *Reactor kinetics), Breeding ratio, Multiplication factors, Neutron spectra, Plutonium dioxide, Reactivity coefficients, Specifications, Uranium dioxide.

For abstract, see NSA 31 12, number 35168.

CEA-CONF-2815 PC$4.50/MF$2.25
CEA Centre d'Etudes Nucleaires de Saclay, 91 - Gif-sur-Yvette (France). Div. d'Etude et de Developpement des Reacteurs.
Heat-Producing Swimming Pool Reactor and Its Use for Urban Heating, Desalination of Water, and Other Industrial Applications.
B. Lerouge. 3 Sep 74, 30p CONF-740983-1
In French. U.S. Sales Only.

Descriptors: (*Process heat reactors, *Economics), (*Desalination reactors, Economics), Optimization, Performance, Space heating.

For abstract, see NSA 31 12, number 35212.

CEA-CONF-2898 PC$4.00/MF$2.25
CEA Centre d'Etudes Nucleaires de Cadarache, 13 - Saint-Paul-les-Durance (France).
Carbide Vented Fuel Element: Theoretical Study of Released Activity in Steady-State Operation.
J. Truffert, and H. Ollier. 10 Jul 74, 8p CONF-741017-27
In English and French. U.S. Sales Only.

Descriptors: (*Lmfbr type reactors, Fuel elements), (*Fuel elements, *Vents), Configuration, Performance, Plutonium carbides, Specifications.

For abstract, see NSA 31 12, number 35169.

CONF-750303-36 PC$4.00/MF$2.25
Oak Ridge National Lab., Tenn.
Study of the exp 233 U- exp 232 TH Reactor as a Burner for Actinide Wastes.
S. Raman, C. W. Jr. Nestor, and J. W. T. Dabbs. 2p

Descriptors: (*Pwr type reactors, *Fuel cycle), Actinides, Performance, Radioactive wastes.

For abstract, see NSA 31 12, number 35149.

DOCKET-50213-392 PC$5.00/MF$2.25
Connecticut Yankee Atomic Power Co., Hartford.
Haddam Neck Plant. Semiannual Operating Report, July--December 1974.
26 Feb 75, 40p

Descriptors: (*Connecticut yankee reactor, *Reactor operation), Environment, Fission product release, Inspection, Performance, Personnel, Power generation, Primary coolant circuits, Radiation doses, Radiation monitoring, Radioactive effluents, Reactor maintenance, Reactor shutdown, Solid wastes, Testing, Transport, Water chemistry.

For abstract, see NSA 31 12, number 35626.

DOCKET-50244-382 PC$5.25/MF$2.25
Rochester Gas and Electric Corp., N.Y.
Robert Emmett Ginna Nuclear Power Plant, Unit 1. Tenth Semiannual Operations Report, July--December 1974.
27 Feb 75, 44p

Descriptors: (*Ginna-1 reactor, *Environment), Containment, Education, Environmental effects, Inspection, Leak testing, Modifications, Personnel, Power generation, Primary coolant circuits, Radiation monitoring, Radioactive waste management, Reactor maintenance, Reactor operation, Reactor shutdown, Solid wastes, Water chemistry.

For abstract, see NSA 31 12, number 35627.

DOCKET-50254-553 PC$7.00/MF$2.25
Commonwealth Edison Co., Chicago, Ill.
Quad-Cities Station, Units 1 and 2. Semiannual Operating Report, July--December 1974.
20 Feb 75, 78p DOCKET-50265-494

Descriptors: (*Quad cities-1 reactor, *Reactor operation), (*Quad cities-2 reactor, Reactor operation), Electric power, Power generation, Reactor maintenance, Reactor shutdown.

For abstract, see NSA 31 12, number 35628.

DOCKET-50255-456 PC$5.75/MF$2.25
Consumers Power Co., Jackson, Mich.
Palisades Nuclear Plant. Semiannual Operations Report, July--December 1974.
28 Feb 75, 51p

Descriptors: (*Palisades-1 reactor, *Reactor operation), Environment, Feedwater, Fission product release, Heaters, Leaks, Power generation, Radiation monitoring, Radioactive waste disposal, Reactor maintenance, Reactor shutdown, Repair, Rotors, Steam condensers, Steam generators, Tubes, Turbines.

For abstract, see NSA 31 12, number 35629.

DOCKET-50259-541 PC$10.75/MF$2.25
Tennessee Valley Authority, Chattanooga.
Browns Ferry Nuclear Power Station, Units 1 and 2. Semiannual Report, July--December 1974 and Appendix a-Water Quality and Biological Conditions in Wheeler Reservoir, July--December 1974.
28 Feb 75, 151p DOCKET-50260-323

Descriptors: (*Browns ferry-1 reactor, *Environmental effects), (*Browns ferry-2 reactor, Environmental effects), Environment, Fission product release, Personnel, Power generation, Primary coolant circuits, Radiation doses, Radiation monitoring, Radiation sources, Radioactive waste disposal, Reactor maintenance, Reactor operation, Reactor shutdown, Solid wastes, Water chemistry, Water reservoirs.

For abstract, see NSA 31 12, number 35630.

DOCKET-50263-469 PC$5.75/MF$2.25
Northern States Power Co., Minneapolis, Minn.

Monticello Nuclear Generating Plant, Unit 1. Semiannual Operating Report No. 8, July--December 1974.
28 Feb 75, 54p

Descriptors: (*Monticello reactor, *Environment), Criticality, Fission product release, Radiation monitoring, Reactor maintenance, Reactor operation, Reactor shutdown, Testing.

For abstract, see NSA 31 12, number 35631.

DOCKET-50266-263 PC$9.00/MF$2.25
Wisconsin Electric Power Co., Milwaukee.
Point Beach Nuclear Plant, Units 1 and 2. Semiannual Operation Report No. 9, July--December 1974.
1974, 118p DOCKET-50301-238

Descriptors: (*Point beach-1 reactor, *Reactor operation), (*Point beach-2 reactor, Reactor operation), Availability, Efficiency, Environment, Environmental effects, Performance, Power generation, Radiation monitoring, Radiation protection, Reactor control systems, Reactor instrumentation, Reactor maintenance, Safety, Water chemistry.

For abstract, see NSA 31 12, number 35632.

DOCKET-50267-250 PC$5.75/MF$2.25
Public Service Co. of Colorado, Denver.
Fort St. Vrain Nuclear Generating Station. Semiannual Operating Report, July--December 1974.
28 Feb 75, 53p

Descriptors: (*Vrain reactor, *Reactor operation), Blowers, Condensates, Criticality, Feedwater, Heating, Personnel, Radioactive waste disposal, Radioactive waste management, Reactor cooling systems, Reactor cores, Reactor maintenance, Reactor start-up, Solid wastes, Testing, Water chemistry.

For abstract, see NSA 31 12, number 35633.

DOCKET-50267-254 PC$6.25/MF$2.25
Public Service Co. of Colorado, Denver.
Fort St. Vrain Nuclear Generating Station. Semi-Annual Operating Report No. 2, July--December 1974.
14 Mar 75, 61p

Descriptors: (*Vrain reactor, *Reactor operation), Blowers, Condensates, Control, Criticality, Feedwater, Meteorology, Radiation protection, Radioactive effluents, Reactor maintenance, Specifications, Steam generators, Testing, Water chemistry.

For abstract, see NSA 31 12, number 35634.

DOCKET-50269-337 PC$34.50/MF$2.25
Duke Power Co., Charlotte, N.C.
Oconee Nuclear Station, Units 1, 2, and 3. Semiannual Operating Report and Non-Radiological Environmental Specifications, June--December 1974.
28 Feb 75, 627p DOCKET-50270-290, DOCKET-50287-221

Descriptors: (*Oconee-1 reactor, *Environmental effects), (*Oconee-2 reactor, Environmental effects), (*Oconee-3 reactor, Environmental effects), Aquatic ecosystems, Auxiliary water systems, Containment, Diseases, Environment, Fishes, Fission product release, Inspection, Intake structures, Lakes, Leak testing, Monitoring, Mortality, Nonradioactive waste disposal, Performance, Plankton, Primary coolant circuits, Radiation monitoring, Radioactive waste disposal, Reactor cooling systems, Reactor maintenance, Reactor operation, Specifications, Testing, Thermal effluents, Water chemistry.

For abstract, see NSA 31 12, number 35635.

DOCKET-50282-343 PC$7.25/MF$2.25
Northern States Power Co., Minneapolis, Minn.
Prairie Island Nuclear Generating Plant, Units 1 and 2. Semiannual Operating Report No. 3, July 1--December 31, 1974.
28 Feb 75, 85p DOCKET-50306-243

Descriptors: (*Prairie island-1 reactor, *Reactor operation), (*Prairie island-2 reactor, Reactor operation), (*Environment, *Radiation monitoring), Inspection, Performance, Personnel, Power generation, Radiation doses, Radioactive effluents, Reactor maintenance, Reactor shutdown, Testing.

For abstract, see NSA 31 12, number 35636.

DOCKET-50298-321 PC$8.50/MF$2.25
Nebraska Public Power District, Columbus.
Cooper Nuclear Station. Semiannual Operating Report, July--December 1974.
28 Feb 75, 108p

Descriptors: (*Cooper reactor, *Reactor operation), Availability, Operation, Performance, Personnel, Power generation, Radiation doses, Radioactive waste disposal, Reactor maintenance, Thermal effluents, Turbogenerators.

For abstract, see NSA 31 12, number 35637.

DOCKET-50305-281 PC$15.25/MF$2.25
Wisconsin Public Service Corp., Green Bay.
Kewaunee Nuclear Power Plant. Semiannual Operating Report, July--December 1974.
28 Feb 75, 243p

Descriptors: (*Kewaunee reactor, *Reactor operation), Availability, Design, Efficiency, Environment, Inspection, Power generation, Primary coolant circuits, Radiation monitoring, Radiation protection, Reactor control systems, Reactor instrumentation, Reactor maintenance, Water chemistry.

For abstract, see NSA 31 12, number 35638.

FIND-50348-R1 PC$4.00/MF$2.25
Energy Research and Development Administration, Oak Ridge, Tenn. Technical Information Center.
Find: Joseph M. Farley Nuclear Power Plant, Units 1 and 2.
W. H. Williams. Mar 75, 35p

Descriptors: (*Farley-1 reactor, *Reactor licensing), (*Farley-2 reactor, Reactor licensing), Indexes, Reactor safety, Us erda, Us nrc.

For abstract, see NSA 31 12, number 35639.

FZK-343 PC$9.00/MF$2.25
General Dynamics/Fort Worth, Tex.
Nerva Irradiation Program. Mapping of the Radiation Field within the In-Pile Tube of the Aerospace Systems Test Reactor.
J. H. Lewis, R. E. Bullock, and J. S. Kunselman.
15 Nov 67, 117p

Descriptors: (*Astr reactor, *Experimental channels), Nerva reactor, Radiation doses, Radiation heating.

For abstract, see NSA 31 12, number 35188.

GA-A-13168 PC$6.75/MF$2.25
General Atomic Co., San Diego, Calif.
Strontium Transport Data for Htgr Systems.
B. F. Myers, and W. E. Bell. 6 Dec 74, 73p GA-LTR-16
Contract AT(04-3)-167

Descriptors: (*Htgr type reactors, Coated fuel particles), (*Coated fuel particles, *Strontium), (*Fuel rods, Strontium), (*Graphite, Strontium), Diffusion, Spatial distribution.

For abstract, see NSA 31 12, number 35154.

GERHTR-89 PC$5.45/MF$2.25
Kernforschungsanlage Juelich G.m.b.H. (F.R. Germany). Inst. fuer Reaktorwerkstoffe und Heisse Zellen.
Determination of the Residual Fission Metal Content and Burnup on Spherical Fuel Elements with a Uranium--Thorium Heavy Metal Insert by the gamma-Spectrometric Analysis of Protactinium-233 and Barium-140.
R. Duwe. May 74, 91p
Translation of JUL--955-RW.

Descriptors: (*Pebble bed reactors, Coated fuel particles), (*Coated fuel particles, *Burnup), Barium 140, Gamma fuel scanning, Gamma spectroscopy, Inspection, Protactinium 233.

For abstract, see NSA 31 12, number 35161.

JAPFNR-179 PC$4.00/MF$2.25
Japan Atomic Energy Research Inst., Oarai, Ibaraki. Oarai Research Establishment.
Effects of Bowing Distortions on Heat Transfer in a Seven-Pin Bundle.
K. Haga, Y. Daigo, A. Ohtsubo, and Y. Kikuchi.
Nov 74, 11p CONF-741104-4, PNC-N-941-74-73
U.S. Sales Only.

Descriptors: (*Lmfbr type reactors, Fuel assemblies), (*Fuel assemblies, *Deformation), Fuel pins, Heat transfer, Liquid flow, Performance testing.

For abstract, see NSA 31 12, number 35173.

KFK-2106 PC$9.00/MF$2.25
Kernforschungszentrum Karlsruhe (F.R. Germany). Inst. fuer Material- und Festkoerperforschung.
Design, Irradiation, and Post Irradiation Examination of the Uo sub 2 /Puo sub 2 : Fuel Pin Irradiation Experiments of the BR2 Capsule Group MOL 8-B.
P. Weimar, and H. Sebening. Jan 75, 116p
In German. U.S. Sales Only.

Descriptors: (*Lmfbr type reactors, Fuel pins), (*Fuel pins, *Performance testing), (*Br-2 reactor, *Irradiation capsules), Design, Fabrication, Plutonium dioxide, Uranium dioxide.

For abstract, see NSA 31 12, number 35174.

LA-UR-75-215 PC$4.00/MF$2.25
Los Alamos Scientific Lab., N.Mex.
Modeling Maximum Likelihood Estimation of Availability.
R. A. Waller, G. W. Rock, and G. L. Tietjen. 1975, 15p CONF-750426-1
Contract W-7405-ENG-36

Descriptors: (*Nuclear power plants, *Availability), Performance, Statistical models.

For abstract, see NSA 31 12, number 35623.

LA-tr-75-9 PC$6.75/MF$2.25
Japan Atomic Energy Research Inst., Tokai, Ibaraki. Tokai Research Establishment.
Prelude-2: Seismic Response Analysis Code for Block-Type Fuel Core.
T. Ikushima. Mar 75, 74p
Translation of JAERI-M--5560

Descriptors: (*Htgr type reactors, Reactor cores), (*Reactor cores, *Seismic effects), (*Computer codes, *P codes), Configuration, Stresses.

For abstract, see NSA 31 12, number 35155.

NP-20338 PC$4.00/MF$2.25
Scottish Universities Research and Reactor Centre, Glasgow (UK).
Scottish Universities Research and Reactor Centre.
11 Jan 75, 15p
U.S. Sales Only.

Descriptors: (*Srrc-utr-100 reactor, *Research programs), (*United kingdom organizations, Research programs), Carbon 14, Cobalt 60, Computers, Education, Geology, Isotope dating, Nuclear medicine, Radiation sources, Reactor experimental facilities.

For abstract, see NSA 31 12, number 35191.

ORNL-TM-3624 PC$7.00/MF$2.25
Oak Ridge National Lab., Tenn.
Lmfbr Fuel Cycle Studies Progress Report for October 1971, No. 32.
Dec 71, 76p
Contract W-7405-eng-26

Descriptors: (*Lmfbr type reactors, *Fuel cycle), (*Fuel pins, *Performance testing), (*Spent fuels, *Reprocessing), (*Plutonium dioxide, *Fabrication), Physical radiation effects, Transport, Uranium dioxide.

For abstract, see NSA 31 12, number 35176.

ORNL-TM-3724 PC$5.50/MF$2.25
Oak Ridge National Lab., Tenn.
Lmfbr Fuel Cycle Studies Progress Report for January 1972, No. 35.
Feb 72, 46p
Contract W-7405-eng-26

Descriptors: (*Lmfbr type reactors, *Fuel cycle), (*Fuel pins, *Performance testing), (*Spent fuels, *Reprocessing), (*Plutonium dioxide, *Fabrication), Physical radiation effects, Transport, Uranium dioxide.

For abstract, see NSA 31 12, number 35177.

ORNL-TM-4879 PC$4.25/MF$2.25
Oak Ridge National Lab., Tenn.
High Flux Isotope Reactor Quarterly Report: October, November, and December of 1974.
R. V. McCord, and B. L. Corbett. Apr 75, 22p
Contract W-7405-eng-26

Descriptors: (*Hfir reactor, *Reactor maintenance), Reactor experimental facilities, Reactor operation.

For abstract, see NSA 31 12, number 35192.

PB-242 277/2GA PC$3.25/MF$2.25
Nuclear Regulatory Commission, Washington, D.C. Office of Nuclear Reactor Regulation.
The Safety Evaluation Report by the Office of Nuclear Reactor Regulation, U.S. Nuclear Regulatory Commission in the Matter of Washington Public Power Supply System, Washington Nuclear Projects Nos. 1 and 4, Docket Nos. 50-460 and 50-513. Supplement No. 1.
May 75, 18p NUREG-75/036-Suppl-1
See also PB-241 266.

Descriptors: *Nuclear power plants, *Nuclear reactor safety, Nuclear reactor coolants, Nuclear reactor containment, Washington(State).
Identifiers: Loss of coolant, Benton County(Washington).

Supplement No. 1 to the Safety Evaluation Report (SER) of the Washington Public Power Supply System's application for licenses to construct and operate its proposed nuclear project, nos. 1 and 4 (Docket Nos. 50-460 and 50-513), located on the Energy Research and Development Administration's Hanford Reservation in Benton County, Washington, has been prepared by the Office of Nuclear Reactor Regulation of the Nuclear Regulatory Commission (NRC). This supplement, which updates the SER issued on May 2, 1975, provides additional information concerning NRC staff evaluation of information submitted by the applicant since issuance of the first SER. A current status list of outstanding issues in the first SER is also included.

PB-242 421/6GA PC$8.75/MF$2.25
Nuclear Regulatory Commission, Washington, D.C. Office of Nuclear Reactor Regulation.
The Construction of Tennessee Valley Authority's Hartsville Nuclear Plants, Plant A, Units 1 and 2, and Plant B, Units 1 and 2.
Final environmental statement.
Jun 75, 296p NUREG-75/039
Report pertains to Docket Numbers STN-50-518, STN 50-519, STN 50-520 and STN 50-521.

Descriptors: *Nuclear power plants, *Nuclear electric power generation, *Environmental impact statements, Radiation hazards, Pollution, Atmospheric circulation, Cooling towers, Boiling water reactors, Thermal pollution, Aquatic biology, Radiation effects, Tennessee.
Identifiers: *Hartsville nuclear power plant, Smith County(Tennessee), Trousdale County(Tennessee).

A Final Environmental Statement related to the proposed construction of the Tennessee Valley Authority's Hartsville Nuclear Plants, Plant A, Units 1 and 2, and Plant B, Units 1 and 2 (Docket Nos. 50-518,50-519,50-520, 50-521, respectively), located in Smith & Trousdale Counties, 5 miles SE of Hartsville, Tenn., has been prepared by the Office of Nuclear Reactor Regulation of the Nuclear Regulatory Commission. The Statement provides (1) a summary of environmental impact and adverse effects of the proposed facility, and (2) a consideration of principal alternatives. Also included are comments of governmental agencies and other organizations on the Draft Environmental Statement for these projects, and staff responses to these comments. The Nuclear Regulatory Commission staff has concluded, based on a weighing of the environmental, economic, technical, and other benefits against environmental costs and available alternatives, that construction permits could be granted.

SCP-2.28.05-2 PC$5.00/MF$2.25
Scandpower A/S, Oslo (Norway).
Atmospheric Dispersion and Radiation Dose Calculations for Nuclear Power Plant: Supplementary Report. Meteorological Conditions, Prospective Site: Saga (Porsgrunn).
K. Killerud, B. Sivertsen, and H. Dovland. Jun 74, 33p
In Norwegian. U.S. Sales Only.

Descriptors: (*Norway, Nuclear power plants), (*Nuclear power plants, *Site selection), Atmospheric precipitations, Diffusion, Meteorology, Radionuclide migration, Reactor sites, Turbulence, Weather, Wind.

For abstract, see NSA 31 12, number 33163.

TID-26713 PC$5.45/MF$2.25
Energy Research and Development Administration, Oak Ridge, Tenn. Technical Information Center.
Selected Issuances of the Atomic Energy Commission and the Hearing Board in the Rule Making Proceedings on Acceptance Criteria for Emergency Core Cooling Systems for Light-Water-Cooled Nuclear Power Reactors (Docket-RM-50-1).
Mar 75, 59p

Descriptors: (*Us nrc, Bwr type reactors), (*Bwr type reactors, Eccs), (*Pwr type reactors, Eccs), (*Eccs, *Legal aspects), Performance, Specifications, Usa.

For abstract, see NSA 31 12, number 35641.

TID-8200(R31) PC$4.00/MF$2.25
Energy Research and Development Administration, Oak Ridge, Tenn. Technical Information Center.
Nuclear Reactors Built, Being Built, or Planned.
31 Dec 74, 48p

Descriptors: (*Power reactors, *Reactor operation), (*Research reactors, Reactor operation), (*Zero power reactors, Reactor operation), (*Usa, Power reactors), Construction, Planning, Reactor shutdown, Specifications.

For abstract, see NSA 31 12, number 35133.

WANL-TME-1046 PC$4.00/MF$2.25
Westinghouse Electric Corp., Pittsburgh, Pa. Astronuclear Lab.
Dosimetry Test Experiment Re-2 Irradiated at Plum Brook Reactor Facility, Pbrf Cycle 28P (Pb No. 9W). Preliminary Data Report.
1 Dec 64, 13p

Descriptors: (*Pbr reactor, *Dosemeters), Irradiation capsules, Neutron flux, Neutron spectra, Performance testing, Spatial distribution, Test facilities.

For abstract, see NSA 31 12, number 35196.

WANL-TME-690 PC$4.00/MF$2.25
Westinghouse Electric Corp., Pittsburgh, Pa. Astronuclear Lab.
Design Manual and Hazards Analysis for Experiment Re-1 Dosimetry Test at Plum Brook Reactor Facility (Rfi, 63-05).
J. H. Schlueter. 14 Feb 64, 11p

Descriptors: (*Pbr reactor, *Radiation hazards), Neutron flux, Neutron spectra, Reactor operation, Test facilities, Testing.

For abstract, see NSA 31 12, number 35193.

WANL-TME-690(Rev.1) PC$4.00/MF$2.25
Westinghouse Electric Corp., Pittsburgh, Pa. Astronuclear Lab.
Design Manual and Hazards Analysis for Experiment Re-1 Dosimetry Test at Plum Brook Reactor Facility (Rfi, 63-05).
J. H. Schlueter, and E. Llewellyn. 4 Mar 64, 14p

Descriptors: (*Pbr reactor, *Radiation hazards), Neutron flux, Neutron spectra, Reactor operation, Test facilities, Testing.

For abstract, see NSA 31 12, number 35194.

WANL-TME-954 PC$4.50/MF$2.25
Westinghouse Electric Corp., Pittsburgh, Pa. Astronuclear Lab.
Piping Specification for NASA Lewis Research Center, Plum Brook Station, Sandusky, Ohio.
F. T. Johnson. Sep 64, 27p

Descriptors: (*Pbr reactor, *In pile loops), Fabrication, Irradiation capsules, Specifications, Testing.

For abstract, see NSA 31 12, number 35195.

WANL-TMI-1866 PC$4.50/MF$2.25
Westinghouse Electric Corp., Pittsburgh, Pa. Astronuclear Lab.

"Rabbit" Specimen Transfer System, Concept Report.
R. K. Brown, and J. G. Hanks. Jan 68, 28p

Descriptors: (*Pbr reactor, *Rabbit tubes), Reactor operation, Remote handling equipment, Specifications.

For abstract, see NSA 31 12, number 35197.

18F. Radiation Shielding and Protection

DPSPU-74-124-3 PC$6.75/MF$2.25
Du Pont de Nemours (E.I.) and Co., Aiken, S.C. Savannah River Plant.
Safety Analysis Report: Packages. Lp-12-1 Tritium Package (Packaging of Fissile and Other Radioactive Materials). Final Report.
J. W. Edl. Jan 75, 73p
Contract AT(07-2)-1

Descriptors: (*Tritium, *Transport), (*Casks, *Safety), Design, Specifications.

For abstract, see NSA 31 12, number 34103.

LA-5903-MS PC$4.00/MF$2.25
Los Alamos Scientific Lab., N.Mex.
Monte Carlo Code Development in Los Alamos.
L. L. Carter, E. D. Cashwell, C. J. Everett, C. A. Forest, and R. G. Schrandt. Mar 75, 7p
Contract W-7405-eng-36

Descriptors: (*Computer codes, *M codes), (*Monte carlo method, Computer codes), Charged-particle transport, Lasl, Neutron transport, Photon transport.

For abstract, see NSA 31 12, number 35039.

NTO-R-0111 PC$4.25/MF$2.25
NERVA Test Operations, Jackass Flats, Nev.
Shielding Integrity Check (Sic) Tests for the E-MAD Facility. Phase IV. Final Report.
J. M. Britton. 27 Jun 67, 23p

Descriptors: (*Nerva reactor, Test facilities), (*Test facilities, Biological shielding), (*Biological shielding, *Performance testing), Concretes, Defects, Gamma sources, Lead, Openings, Radiation monitoring, Voids.

For abstract, see NSA 31 12, number 32996.

ORNL-TM-1312(Vol.16) PC$4.00/MF$2.25
Oak Ridge National Lab., Tenn.
Obsolete Cask Program: Test Number 2.
L. B. Shappert, N. C. Bradley, J. H. Evans, and M. C. Jurgensen. Apr 75, 23p
Contract W-7405-eng-26

Descriptors: (*Radioactive materials, *Transport), (*Casks, *Impact tests), Safety.

For abstract, see NSA 31 12, number 34104.

WANL-TMI-1955 PC$4.00/MF$2.25
Westinghouse Electric Corp., Pittsburgh, Pa. Astronuclear Lab.
Plastic Shipping Bottle Qualification Test.
R. S. Anderson. 10 Jan 69, 9p

Descriptors: (*Radioactive materials, *Transport), (*Containers, *Testing), Failures, Mechanical vibrations, Organic polymers, Welded joints.

For abstract, see NSA 31 12, number 34106.

WANL-TMI-548 PC$4.00/MF$2.25
Westinghouse Electric Corp., Pittsburgh, Pa. Astronuclear Lab.
Fire Hazards Test of Shield Capsules.
J. J. Schreiber. 28 Feb 63, 5p

Descriptors: (*Lithium hydrides, *Combustion), Capsules, Fire hazards, Melting, Shielding, Stainless steels, Testing.

For abstract, see NSA 31 12, number 32999.

WANL-TMI-550 PC$4.00/MF$2.25
Westinghouse Electric Corp., Pittsburgh, Pa. Astronuclear Lab.
Nrx Spent Fuel Shipping Cask.
L. Ricks. 1 Mar 63, 3p

Descrip. ors: (*Spent fuels, *Transport), (*Casks, *Shielding), (*Nrx reactor, Spent fuels), Heat transfer, Heating, Lead, Thickness.

For abstract, see NSA 31 12, number 34105.

WASH-1339 PC$4.00/MF$2.25
USAEC Division of Waste Management and Transportation, Washington, D.C.
Shipment of Nuclear Fuel and Waste: Are They Really Safe.
Aug 74, 12p

Descriptors: (*Radioactive wastes, *Transport), (*Nuclear fuels, Transport), Radiation hazards, Safety.

For abstract, see NSA 31 12, number 34107.

18G. Radioactive Wastes and Fission Products

ANL-8135 PC$5.45/MF$2.25
Argonne National Lab., Ill.
Tritium and Noble-Gas Fission Products in the Nuclear Fuel Cycle. II. Fuel Reprocessing Plants.
B. J. Kullen, L. E. Trevorrow, and M. J. Steindler. Mar 75, 70p
Contract W-31-109-Eng-38

Descriptors: (*Fuel reprocessing plants, *Radioactive wastes), (*Tritium, *Radiation monitoring), (*Rare gases, Radiation monitoring), Fission products, Radioactive waste processing, Spent fuels.

For abstract, see NSA 31 12, number 32649.

BNWL-1899 PC$5.45/MF$2.25
Battelle Pacific Northwest Labs., Richland, Wash.
Nuclear Waste Management and Transportation. Quarterly Progress Report, October--December 1974.
G. J. Dau. Feb 75, 70p
Contract AT(45-1)-1830

Descriptors: (*Radioactive waste disposal, *Research programs), (*Radioactive waste processing, Research programs), (*Waste transportation, Research programs), Actinides, Incinerators, Packaging, Plutonium nitrates, Removal, Safety, Solidification, Tritium, Underground disposal.

For abstract, see NSA 31 12, number 34095.

CONF-750424-1 PC$4.25/MF$2.25
Oak Ridge National Lab., Tenn.
Management of Wastes from the Nuclear Fuel Cycle.
J. O. Blomeke. 1975, 24p

Descriptors: (*Nuclear industry, *Radioactive waste management), Cesium 137, Fuel cycle, Iodine 129, Krypton 85, Radiation hazards, Radioactive waste processing, Radioactive waste storage, Radioactive wastes, Reprocessing, Safety, Spent fuels, Strontium 90, Tritium, Underground disposal, Us aec.

For abstract, see NSA 31 12, number 34096.

LA-5904-MS PC$4.00/MF$2.25
Los Alamos Scientific Lab., N.Mex.
Measurement of Transuranic Solid Wastes at the 10-Nci/G Activity Level.
C. J. Umbarger, and L. R. Cowder. Mar 75, 12p
Contract W-7405-ENG-36

Descriptors: (*Radioactive wastes, *Nondestructive analysis), (*Plutonium 239, Nondestructive analysis), (*Plutonium 240, Nondestructive analysis), (*Plutonium 242, Nondestructive analysis), Americium 241, Measuring methods, Radiation monitoring, Safeguards, Solid scintillation detectors, Transuranium elements, Uranium 233.

For abstract, see NSA 31 12, number 34091.

MLM-2081(LD) PC$5.25/MF$2.25
Mound Lab., Miamisburg, Ohio.
Tritium Effluent Control Project. Progress Report: April--June 1973.
C. J. Kershner. 15 Aug 73, 41p
Contract AT-33-1-GEN-53

Descriptors: (*Tritium, *Radioactive waste processing), Adsorption, Cryogenics, Gloveboxes, Liquid wastes, Research programs.

For abstract, see NSA 31 12, number 32650.

MLM-2100(LD) PC$4.50/MF$2.25
Mound Lab., Miamisburg, Ohio.
Tritium Effluent Control Project. Project Report: July--September 1973.
C. J. Kershner. 26 Nov 73, 28p
Contract AT-33-1-GEN-53

Descriptors: (*Tritium, *Radioactive waste processing), Adsorption, Cryogenics, Gloveboxes, Liquid wastes, Research programs.

For abstract, see NSA 31 12, number 32651.

MLM-2129(LD) PC$4.00/MF$2.25
Mound Lab., Miamisburg, Ohio.
Tritium Effluent Control Project. Progress Report: October--December 1973.
C. J. Kershner. 15 Mar 74, 16p
Contract AT-33-1-GEN-53

Descriptors: (*Tritium, *Radioactive waste processing), (*Hydrogen isotopes, *Distillation), Adsorption, Cryogenics, Gloveboxes, Liquid wastes, Molecular sieves, Research programs.

For abstract, see NSA 31 12, number 32652.

MLM-2146(LD) PC$4.50/MF$2.25
Mound Lab., Miamisburg, Ohio.
Tritium Effluent Control Project. Progress Report: January--March 1974.
C. J. Kershner. 3 Jul 74, 28p
Contract AT-33-1-GEN-53

Descriptors: (*Tritium, *Radioactive waste processing), (*Hydrogen isotopes, *Distillation), Adsorption, Cryogenics, Gloveboxes, Liquid wastes, Research programs.

For abstract, see NSA 31 12, number 32653.

ORNL-4962 PC$5.45/MF$2.25
Oak Ridge National Lab., Tenn.

Development of Cementitious Grouts for the Incorporation of Radioactive Wastes. Part I. Leach Studies.
J. G. Moore, H. W. Godbee, A. H. Kibbey, and D. S. Joy. Apr 75, 116p
Contract W-7405-eng-26

Descriptors: (*Radioactive waste disposal, *Underground disposal), (*Radioactive wastes, *Leaching), Concretes, Solidification.

For abstract, see NSA 31 12, number 34097.

SAND-75-0162 PC$5.00/MF$2.25
Sandia Labs., Albuquerque, N.Mex.
Deep Rock Disposal Experiment No. 1: Acoustic Studies.
A. G. Beattle. Mar 75, 38p
Contract AT(29-1)-789

Descriptors: (*Radioactive waste disposal, *Underground disposal), Acoustic emission testing, Rocks, Safety, Ultrasonic testing.

For abstract, see NSA 31 12, number 34098.

WANL-TMI-981 PC$4.00/MF$2.25
Westinghouse Electric Corp., Pittsburgh, Pa. Astronuclear Lab.
Handling of Radioactive by-Product Material in Materials Irradiation Test Laboratory, Building 9.
M. A. Vogel. 20 Feb 64, 4p

Descriptors: (*Nerva reactor, Test facilities), (*Test facilities, Radioactive materials), (*Radioactive materials, *Materials handling), Capsules, Criticality, Fission products, Hot cells, Nuclear fuels, Radiation protection, Radioactive wastes, Shielding, Uranium 235.

For abstract, see NSA 31 12, number 34102.

18I. Reactor Engineering and Operation

AD-A010 871/2GA PC$5.25/MF$2.25
Naval Postgraduate School Monterey Calif
Investigation of a Suboptimal Controller Design for a Nuclear Reactor System.
Master's thesis,
Mutsuhiro Matsuda. Mar 75, 106p

Descriptors: *Nuclear power plants, *Reactor control, *Control theory, Reactor kinetics, Reactor reactivity, Control rods, Nonlinear differential equations, Matrices(Mathematics), Numerical integration, Theses.
Identifiers: Time varying systems.

The optimal control problem of a typical nuclear reactor power plant, which is described by a ninth-order nonlinear differential equation, having time-varying parameters, is considered. The nonlinear model complicates the optimal controller synthesis. Therefore, the approach of this work is to approximate the response of the reactor system by that of a second-order linear model. The model parameters are chosen to minimize the derivations between the system and model responses using a search routine. The optimal feedback parameters computed for the second-order model is used for suboptimal control of the system. The model parameters are updated to reflect the system nonlinearities as well as changes in the system parameters; the corresponding control scheme is adaptive. It is shown that for the operating conditions considered, the adaptive controller need not be on-line.

AGC-1741(Vol.1) PC$14.00/MF$2.25
Bendix Corp., Southfield, Mich. Research Labs. Div.
Design Study of Engine Controls and Reactor Instrumentation for a Nuclear Flight Test Engine. Final Data Report.
D. J. Schaffer. 28 Feb 61, 217p

Descriptors: (*Nerva reactor, *Reactor control systems), Design, Reactor instrumentation.

For abstract, see NSA 31 12, number 35612.

AGC-2711(Vol.3)(Bk.1)(Pt.1) PC$18.50/MF$2.25
Aerojet-General Corp., Azusa, Calif.
E-MAD and Support Facilities Complex Operations Data Book. Volume III. Book 1. Part 1.
1 Feb 64, 309p

Descriptors: (*Nerva reactor, Test facilities), (*Test facilities, *Operation), Alarm systems, Communications, Electrical equipment, Hot cells, Maintenance, Radiation monitoring, Radioactive waste disposal, Remote control, Rocket engines.

For abstract, see NSA 31 12, number 32809.

AGC-2711(Vol.3)(Bk.1)(Pt.2) PC$14.50/MF$2.25
Aerojet-General Corp., Azusa, Calif.
E-MAD and Support Facilities Complex Operations Data Book. Volume III. Book 1. Part 2.
1 Feb 64, 226p

Descriptors: (*Nerva reactor, Test facilities), (*Test facilities, *Operation), Alarm systems, Communications, Electrical equipment, Hot cells, Maintenance, Radiation monitoring, Radioactive waste disposal, Remote control, Rocket engines.

For abstract, see NSA 31 12, number 32810.

BNL-19763 PC$15.25/MF$2.25
Brookhaven National Lab., Upton, N.Y.
Htgr Safety Evaluation Division. Summary Report, February 1974--February 1975.
1975, 241p

Descriptors: (*Htgr type reactors, Reactor safety), (*Reactor safety, *Research programs), (*Graphite, *Mechanical properties), (*Incoloy 800, Mechanical properties), Chromium-molybdenum steels, Coated fuel particles, Computer codes, Failures, Fission product release, Impurities, Oxidation, Prestressed concrete, Primary coolant circuits, Reactor accidents, Reactor cores, Reactor instrumentation, Reactor materials, Supports.

For abstract, see NSA 31 12, number 35522.

CEA-CONF-2735 PC$4 00/MF$2.25
CEA Centre d'Etudes Nucleaires de Fontenay-aux-Roses, 92 (France). Dept. d'Etudes des Combustibles a Base de Plutonium.
Sodium Loop "Agathe".
F. Perret, and L. Hayet. 20p CONF-740990-1
In French. U.S. Sales Only.

Descriptors: (*Sodium, Test facilities), (*Test facilities, *Design), Fission products, Fuel elements, Liquid metals, Ruptures.

For abstract, see NSA 31 12, number 32811.

CONF-750303-6 PC$4.00/MF$2.25
Argonne National Lab., Ill.
Fast Reactor Safety.
R. Avery. Mar 75, 8p

Descriptors: (*Lmfbr type reactors, *Reactor safety), Design, Reactor accidents, Reactor operation, Reactor protection systems.

For abstract, see NSA 31 12, number 35523.

COO-2294-4 PC$13.00/MF$2.25
Dartmouth Coll., Hanover, N.H. Thayer School of Engineering.
Steam/Water Interaction in a Scaled Pressurized Water Reactor Downcomer Annulus.
C. J. Crowley, G. B. Wallis, and D. L. Ludwig. Sep 74, 198p
Contract AT(11-1)-2294

Descriptors: (*Pwr type reactors, *Loss of coolant), (*Primary coolant circuits, *Liquid flow), Configuration, Eccs, Mockup, Reactor safety, Two-phase flow.

For abstract, see NSA 31 12, number 35524.

EURFNR-1199 PC$4.25/MF$2.25
Kernforschungszentrum Karlsruhe (F.R. Germany). Inst. fuer Neutronenphysik und Reaktortechnik.
Reactor Safety and Prompt Neutron Generation Time.
K. Thurnay. Nov 73, 22p
Translation of KFK--1881.

Descriptors: (*Fbr type reactors, *Prompt neutrons), Neutron flux, Reactivity coefficients, Reactor accidents, Reactor safety.

For abstract, see NSA 31 12, number 35525.

EURFNR-1213 PC$21.75/MF$2.25
Kernforschungszentrum Karlsruhe (F.R. Germany). Inst. fuer Neutronenphysik und Reaktortechnik.
Behavior of the Core of a Fast Sodium-Cooled Reactor after Serious Hypothetical Accidents.
G. Groetzbach, G. Kussmaul, R. Meyder, and D. Struwe. Aug 74, 371p
Translation of KFK--1928.

Descriptors: (*Lmfbr type reactors, *Meltdown), Configuration, Criticality, Heat transfer, Hydraulics, Reactor core disruption, Reactor safety.

For abstract, see NSA 31 12, number 35526.

GTR-10 PC$7.75/MF$2.25
General Dynamics/Fort Worth, Tex.
Nerva Components Irradiation Program, Preliminary Report.
J. W. Evans, W. D. Jr. McMillan, and M. B. Walton. 24 Oct 63, 95p

Descriptors: (*Nerva reactor, *Reactor components), (*Pressure gages, *Physical radiation effects), (*Transducers, Physical radiation effects), (*Accelerometers, Physical radiation effects), Amplifiers, Control equipment, Gamma radiation, Irradiation, Neutron flux, Test facilities.

For abstract, see NSA 31 12, number 33291.

GTR-9 PC$7.75/MF$2.25
General Dynamics/Fort Worth, Tex.
Irradiation Test, Preliminary Report.
21 Oct 63, 93p

Descriptors: (*Nerva reactor, *Reactor components), (*Transducers, *Physical radiation effects), (*Thermometers, Physical radiation effects), (*Strain gages, Physical radiation effects), Accelerometers, Control equipment, Controlled atmospheres, Cryogenics, Gamma radiation, Irradiation, Mechanical vibrations, Neutron flux, Nitrogen, Pressure gages.

For abstract, see NSA 31 12, number 33290.

JAPFNR-178 PC$4.00/MF$2.25
Japan Atomic Energy Research Inst., Oarai, Ibaraki. Oarai Research Establishment.
Loss-of-Flow Tests in Single- and Seven-Pin Geometries.
Y. Kikuchi, K. Haga, and A. Ohtsubo. Nov 74, 14p CONF-741104-5, PNC-N-941-74-74
U.S. Sales Only.

Descriptors: (*Lmfbr type reactors, Fuel assemblies), (*Fuel pins, *Heat transfer), (*Fuel assemblies, Heat transfer), Liquid flow, Loss of flow, Performance testing, Reactor safety.

For abstract, see NSA 31 12, number 35528.

NTO-I-0364(Rev.1) PC$4.00/MF$2.25
NERVA Test Operations, Jackass Flats, Nev.
Nto Instruction for Ets-1 Neutronics Reactor Safety System Set-Up. Revision 1. Final Issue.
H. J. Noell. 10 Jul 68, 19p

Descriptors: (*Nerva reactor, *Reactor safety), Reactor protection systems, Safety engineering.

For abstract, see NSA 31 12, number 35532.

NTO-R-0115 PC$6.75/MF$2.25
NERVA Test Operations, Jackass Flats, Nev.
Nto Test Report for Engine Test Compartment Purge Tests. Compartment Experimental Plan I.
75p

Descriptors: (*Nerva reactor, Test facilities), (*Test facilities, Ducts), (*Ducts, *Testing), Flow rate, Gas flow, Nitrogen, Oxygen, Performance, Pipelines, Stresses, Valves.

For abstract, see NSA 31 12, number 32815.

NTO-SOP-0090(Rev.1) PC$7.25/MF$2.25
NERVA Test Operations, Jackass Flats, Nev.
Quality and Workmanship Manual for Welding. Revision 1.
M. D. Phillips. 30 Apr 68, 82p

Descriptors: (*Nerva reactor, Test facilities), (*Test facilities, Welded joints), (*Welded joints, *Specifications), Education, Manuals, Mechanical structures, Personnel, Pipes, Safety standards, Welding.

For abstract, see NSA 31 12, number 32816.

NTO-T-0003 PC$6.75/MF$2.25
NERVA Test Operations, Jackass Flats, Nev.
Ets-1 Console Operations Manual.
1967, 75p

Descriptors: (*Nerva reactor, Test facilities), (*Test facilities, Steam generators), (*Steam generators, *Remote control), (*Control systems, *Operation), Manuals.

For abstract, see NSA 31 12, number 32817.

NUS-144 PC$8.75/MF$2.25
NUS Corp., Washington, D.C.
Environmental Safety Aspects of Nuclear Rocket Flight Operations. Semi-Annual Progress Report.
Jul 63, 111p

Descriptors: (*Nerva reactor, *Environmental effects), Fission product release, Radiation doses, Reactor operation, Reactor safety, Reentry, Safety.

For abstract, see NSA 31 12, number 35533.

NUS-208 PC$6.25/MF$2.25
NUS Corp., Washington, D.C.
Environmental Safety Aspects of Nuclear Rocket Flight Operations. Semiannual Progress Report.
Dec 64, 65p

Descriptors: (*Nerva reactor, *Environmental effects), (*Gastrointestinal tract, *Radiation doses), Computer calculations, Fission product release, Fragmentation, Radioactive wastes, Reactor operation.

For abstract, see NSA 31 12, number 35534.

ORNL-TM-4805(Vol.4) PC$4.50/MF$2.25
Oak Ridge National Lab., Tenn.
Quarterly Progress Report on Reactor Safety Programs Sponsored by the Nrc Division of Reactor Safety Research for October--December 1974. Iv. High-Temperature Gas-Cooled Reactor Program.
J. P. Sr. Sanders. Apr 75, 29p
Contract W-7405-eng-26

Descriptors: (*Htgr type reactors, Reactor safety), (*Reactor safety, *Research programs), (*Computer codes, *P codes), Reactor accidents, Simulation.

For abstract, see NSA 31 12, number 35535.

PB-242 150/1GA PC$5.75/MF$2.25
Nuclear Regulatory Commission, Washington, D.C. Office of Nuclear Reactor Regulations.
TOODEE 2: A Two Dimensional Time Dependent Fuel Element Thermal Analysis Program.
Jun 75, 126p NUREG-75/057

Descriptors: *Nuclear fuel elements, *Nuclear reactor coolants, *Nuclear reactor accidents, Heat transfer, Partial differential equations, Computation, Computer programming, FORTRAN.
Identifiers: TOODEE2 computer program, FORTRAN 4 programming language, IBM 370/165 computers, *Loss of coolant.

TOODEE2 is a two dimensional, time dependent fuel element thermal analysis program developed by staff of the Nuclear Regulatory Commission from the TOODEE Code. Written in FORTRAN IV language, TOODEE2 was developed primarily as an evaluation tool to calculate fuel element thermal response during the refill and reflood phase of a loss-of-coolant accident in a pressurized water reactor. For small breaks the code may be used for the entire transient. This report contains descriptions of the applicable models used in TOODEE2, a detailed description of the input data, data options for evaluation model calculations (to meet requirements of 10 CFR 50.43, Appendix K), sample input, and definition of input error and warning messages printed by the program.

PB-242 457/0GA PC$5.75/MF$2.25
Nuclear Regulatory Commission, Washington, D.C. Office of Nuclear Reactor Regulation.
Reactor Safety Research Program: A Description of Current and Planned Reactor Safety Research Sponsored by the Nuclear Regulatory Commission's Division of Reactor Safety Research.
Jul 75, 148p NUREG-75/058

Descriptors: *Nuclear reactor safety, Research management, Water cooled reactors, Fast reactors(Nuclear), Gas cooled reactors, Test facilities, Systems engineering, Metallurgy, Environmental issues, Site selection, Nuclear fuels, Fission products, Radiation hazards, Reliability.

The Reactor Safety Research Program, sponsored by the Nuclear Regulatory Commission's Division of Reactor Safety Research, is described in terms of its program objectives, current status, and future plans. Elements of safety research work applicable to water reactors, fast reactors, and gas cooled reactors are presented together with brief descriptions of current and planned test facilities.

RN-DR-0190A PC$9.50/MF$2.25
Aerojet Nuclear Systems Co., Sacramento, Calif.
Addendum Program Plan for the Development of the Instrumentation and Control (I and C) System for the Nerva Engine.
Apr 70, 130p

Descriptors: (*Nerva reactor, *Reactor control systems), Digital computers, Planning, Reactor instrumentation, Research programs.

For abstract, see NSA 31 12, number 35614.

SAND-75-0111 PC$4.50/MF$2.25
Sandia Labs., Albuquerque, N.Mex.
Numerical Modeling of Containment Wall Impact by Tornado Generated Missiles. Preliminary Results.
J. R. Tillerson. Mar 75, 30p
Contract AT(29-1)-789

Descriptors: (*Containment buildings, *Performance), Concretes, Configuration, Mathematical models, Stresses, Tornadoes.

For abstract, see NSA 31 12, number 35589.

TID/SNA-1168 PC$6.00/MF$2.25
Aerojet-General Corp., Azusa, Calif.
Control of Malfunctions on Test and Operational Nuclear Powered Rockets.
J. V. Mageean. 29 Jun 64, 59p

Descriptors: (*Nerva reactor, *Reactor control systems), Failures, Reactor components, Reliability.

For abstract, see NSA 31 12, number 35537.

TID/SNA-1379 PC$4.00/MF$2.25
NERVA Test Operations, Jackass Flats, Nev.
Njd-11, Xe-1 Safety Evaluation Report, Phase II. Supplement 2.
5p

Descriptors: (*Xe-prime reactor, *Reactor safety), Safety.

For abstract, see NSA 31 12, number 35538.

TID/SNA-1510 PC$6.00/MF$2.25
Braun (C.F.) and Co., Alhambra, Calif.
Feo-1 Nerva Facility Structural Design Standards.
Oct 70, 60p

Descriptors: (*Nerva reactor, Test facilities), (*Test facilities, *Specifications), Aluminium, Computer codes, Concretes, Containers, Design, Fabrication, Materials testing, Mechanical structures, Mechanical vibrations, Pipes, Steels, Stress analysis, Stresses, Welded joints.

For abstract, see NSA 31 12, number 32819.

TID/SNA-807 PC$6.00/MF$2.25
Aerojet Nuclear Systems Co., Sacramento, Calif.
Flight and Ground Test Control Integration Plan.
Jan 71, 56p

Descriptors: (*Nerva reactor, *Reactor control systems), Design, Interfaces, Planning.

For abstract, see NSA 31 12, number 35615.

UJV-3254-R PC$4.25/MF$2.25
Ustav Jaderneho Vyzkumu, Rez (Czechoslovakia).
Emergency Heat Removal and Operational Transient Processes in Fast Sodium-Cooled Reactors.
J. Pfann, J. Dusek, and J. Macek. Nov 74, 25p
In Czech. U.S. Sales Only.

Descriptors: (*Lmfbr type reactors, *Reactor safety), (*Transients, *Mathematical models), Eccs, Heat transfer, Hydraulics, Liquid flow, Reactor accidents.

For abstract, see NSA 31 12, number 35539.

WANL-TME-1126(Suppl.1) PC$5.00/MF$2.25
Westinghouse Electric Corp., Pittsburgh, Pa. Astronuclear Lab.
Supplement 1 to Nrx/Est Safety Evaluation Report.
15 Nov 65, 36p

Descriptors: (*Nrx-a4-est reactor, *Reactor safety), Planning.

For abstract, see NSA 31 12, number 35540.

WANL-TME-1126(Suppl.2)(Rev.1) PC$4.25/MF$2.25
Westinghouse Electric Corp., Pittsburgh, Pa. Astronuclear Lab.
Supplement 2 to Nrx/Est Safety Evaluation Report.
20 Nov 65, 25p

Descriptors: (*Nrx-a4-est reactor, *Reactor safety), Planning.

For abstract, see NSA 31 12, number 35541.

WANL-TME-1126(Suppl.3) PC$4.50/MF$2.25
Westinghouse Electric Corp., Pittsburgh, Pa. Astronuclear Lab.
Supplement 3 to Nrx/Est Safety Evaluation Report.
27 Dec 65, 29p

Descriptors: (*Nrx-a4-est reactor, *Reactor safety), Modifications, Planning.

For abstract, see NSA 31 12, number 35542.

WANL-TME-1126(Suppl.3)(Rev.2)(Add.1) PC$4.00/MF$2.25
Westinghouse Electric Corp., Pittsburgh, Pa. Astronuclear Lab.
Nrx/Est Safety Evaluation Report.
E. H. Hemmerle. 27 Jan 66, 2p

Descriptors: (*Nrx-a4-est reactor, *Reactor safety), Planning.

For abstract, see NSA 31 12, number 35543.

WANL-TME-1126(Suppl.4) PC$4.00/MF$2.25
Westinghouse Electric Corp., Pittsburgh, Pa. Astronuclear Lab.
Supplement 4 to Nrx/Est Safety Evaluation Report.
J. Skaritka. 15 Feb 66, 20p

Descriptors: (*Nrx-a4-est reactor, *Reactor safety), Modifications, Planning.

For abstract, see NSA 31 12, number 35544.

WANL-TME-1169 PC$4.25/MF$2.25
Westinghouse Electric Corp., Pittsburgh, Pa. Astronuclear Lab.
Nrx-A3 EP-VI Control Test Analysis and Simulation.
K. Cooper, and D. Junker. 24 May 65, 25p

Descriptors: (*Nrx-a3 reactor, *Reactor control systems), Performance, Testing.

For abstract, see NSA 31 12, number 35616.

WANL-TME-1714 PC$13.75/MF$2.25
Westinghouse Electric Corp., Pittsburgh, Pa. Astronuclear Lab.
Xe-1 Nuclear Subsystem Control System Description Report.
C. L. Sossman. 4 Jan 68, 211p

Descriptors: (*Xe-prime reactor, *Reactor control systems), Reactor safety, Reactor start-up, Transfer functions.

For abstract, see NSA 31 12, number 35617.

WANL-TME-227 PC$4.00/MF$2.25
Westinghouse Electric Corp., Pittsburgh, Pa. Astronuclear Lab.
E-MAD Facility Phase II Preliminary Design.
L. O. Ricks. 13 Dec 62, 1p

Descriptors: (*Nerva reactor, Test facilities), (*Test facilities, Hot cells), (*Hot cells, Shielding), (*Shielding, *Design), Specifications.

For abstract, see NSA 31 12, number 32820.

WANL-TME-265 PC$4.00/MF$2.25
Westinghouse Electric Corp., Pittsburgh, Pa. Astronuclear Lab.
Review of Vitro E-MAD Drawings.
A. J. Svasek. 5 Feb 63, 1p

Descriptors: Design, Diagrams, Nerva reactor, Test facilities.

For abstract, see NSA 31 12, number 32821.

WANL-TMI-1500 PC$4.00/MF$2.25
Westinghouse Electric Corp., Pittsburgh, Pa. Astronuclear Lab.
Control Drum Friction Test.
I. N. Kallin. 2 Jul 65, 4p

Descriptors: (*Nerva reactor, *Control elements), Beryllium, Friction, Neutron reflectors.

For abstract, see NSA 31 12, number 35618.

WANL-TMI-1766 PC$4.00/MF$2.25
Westinghouse Electric Corp., Pittsburgh, Pa. Astronuclear Lab.
Actuation System for Ganged Drums.
H. S. Kirschbaum. Apr 67, 13p

Descriptors: (*Nerva reactor, *Reactor control systems), Control rod drives, Design, Reliability.

For abstract, see NSA 31 12, number 35619.

WANL-TMI-1992 PC$4.50/MF$2.25
Westinghouse Electric Corp., Pittsburgh, Pa. Astronuclear Lab.
Applications of Normal Function Algebra with Compatibility Comparisons Between Analytic and Numerical Analysis.
R. A. Smith. Oct 70, 29p

Descriptors: (*Reactor components, *Reliability), Computer codes, Mathematical models, Monte carlo method, N codes, Reactor materials, Stress analysis.

For abstract, see NSA 31 12, number 35590.

WANL-TMI-855 PC$4.00/MF$2.25
Westinghouse Electric Corp., Pittsburgh, Pa. Astronuclear Lab.
Bar-X and K-Seal Evaluation Tests.
W. L. Jacob. 7 Nov 73, 18p

Descriptors: (*Nerva reactor, Test facilities), (*Test facilities, Seals), (*Seals, *Leak testing), Hydrogen, Low temperature, Medium temperature, Performance.

For abstract, see NSA 31 12, number 32822.

18J. Reactor Materials

BMI-1732 PC$5.25/MF$2.25
Battelle Columbus Labs., Ohio.
Properties of Uranium Carbide-Based Fuel Materials at Elevated Temperatures.
D. P. Moak, S. G. Nelson, E. L. Foster, and D. L. Keller. 29 Jun 65, 42p
Contract W-7405-eng-92

Descriptors: (*Uranium carbides, *Physical properties), (*Molybdenum carbides, Physical properties), (*Titanium carbides, Physical properties), Chemical composition, Compression strength, Density, Electric conductivity, Hardness, High temperature, Quantity ratio, Temperature dependence, Thermal conductivity, Thermal expansion, Very high temperature, Vanadium carbides, Niobium carbides, Tantalum carbides.

For abstract, see NSA 31 12, number 33711.

EPRI-SR-7 PC$4.00/MF$2.25
Electric Power Research Inst., Palo Alto, Calif.
Therm: Transient Thermal Analysis of a Nuclear Fuel Rod.
Mar 75, 40p

Descriptors: (*Fuel rods, *Heat transfer), (*Computer codes, *T codes), Cylindrical configuration, Fortran, Fuel channels, Temperature distribution, Transients.

For abstract, see NSA 31 12, number 35611.

EURFNR-1205 PC$4.00/MF$2.25
Kernforschungszentrum Karlsruhe (F.R. Germany). Inst. fuer Material- und Festkoerperforschung.
Coating of Uo sub 2 Pellets with Niobium Metal.
H. Schneider, and E. Nold. Jun 74, 16p
Translation of KFK--2008.

Descriptors: (*Fuel pellets, *Cladding), (*Uranium dioxide, Fuel pellets), (*Niobium, *Chemical vapor deposition), Fuel cans, Hydrogen, Niobium chlorides, Reduction, Very high temperature.

For abstract, see NSA 31 12, number 33714.

GEMP-35B PC$9.25/MF$2.25
General Electric Co., Cincinnati, Ohio Nuclear Materials and Propulsion Operation.
High-Temperature Materials Program Progress Report No. 35, Part B.
28 May 64, 122p
Contract AT(40-1)-2847

Descriptors: (*Uranium dioxide, *Fuel-cladding interactions), (*Uranium sulfides, Fuel-cladding interactions), (*Control elements, *Research programs), (*Moderators, Research programs), Alloy nuclear fuels, Aluminium alloys, Cermets, Chromium alloys, Coated fuel particles, Compatibility, Corrosion resistance, Creep, Direct energy conversion, Dispersion nuclear fuels, Elasticity, Enthalpy, Fatigue, Fuel cans, Iron alloys, Mechanical properties, Molybdenum alloys, Oxides, Physical radiation effects, Rare earths, Reactor materials, Rhenium alloys, Rup-

tures, Sintered materials, Stainless steel-304, Stresses, Tantalum alloys, Thermal conductivity, Thermocouples, Thermodynamic properties, Thorium oxides, Titanium hydrides, Tungsten alloys, Uranium hydrides, Uranium 238, Very high temperature, Yttrium alloys, Yttrium hydrides, Yttrium oxides, Zirconium hydrides, Zirconium oxides.

For abstract, see NSA 31 12, number 33715.

GESR-2038 PC$17.75/MF$2.25
General Electric Co., Pleasanton, Calif. Special Purpose Nuclear Systems Operation.
Development of a Nuclear Thermionic Fuel Element. Annual Summary and Eighth Quarterly Progress Report, March 1, 1964--May 31, 1964.
1964, 294p
Contract AT(04-3)-189

Descriptors: (*Uranium dioxide, *Fuel-cladding interactions), (*Molybdenum, Fuel-cladding interactions), (*Tungsten, Fuel-cladding interactions), (*Thermionic fuel elements, *Research programs), Diffusion, Fission products, Fuel cans, Irradiation capsules, Physical radiation effects, Thermal cycling, Thermionic diodes, Thermionic emission, Thermionic reactors.

For abstract, see NSA 31 12, number 33716.

HW-66717 PC$5.00/MF$2.25
Hanford Engineering Development Lab., Richland, Wash.
Simulated Npr Ruptures of Irradiated Fuels in an out-of-Reactor Loop.
K. D. Hayden, and G. E. Neibaur. Mar 61, 38p
Contract AT(45-1)-1350

Descriptors: (*N-reactor, *Fuel cans), Fuel rods, Performance testing, Ruptures, Simulation.

For abstract, see NSA 31 12, number 35213.

JAPFNR-180 PC$4.00/MF$2.25
Power Reactor and Nuclear Fuel Development Corp., Tokyo (Japan).
Materials Monitoring Facility (Mmf) for Fast Reactor Material Testing.
K. Uematsu, Y. Ishida, K. Suzuki, and S. Yamanouchi. 1974, 22p PNC-D-023-74-01-8
U.S. Sales Only.

Descriptors: (*Reactor materials, *Mechanical tests), (*Hot cells, *Design), (*Fast reactors, Reactor materials), Charpy test, Compression strength, Creep, Density, Electron microscopy, Fatigue, High temperature, Metallography, Tensile properties.

For abstract, see NSA 31 12, number 32814.

LA-3496 PC$9.25/MF$2.25
Los Alamos Scientific Lab., N.Mex.
Development of Particles Coated with Pyrolytic Carbon. I. Coatings from Methane at Low Temperatures.
R. J. Bard, W. J. McCreary, A. W. Jr. Savage, H. R. Baxman, and J. P. Bertino. Mar 66, 125p
Contract W-7405-ENG-36

Descriptors: (*Uranium dioxide, *Vapor deposited coatings), (*Uranium carbides, Vapor deposited coatings), (*Pyrolytic carbon, *Chemical vapor deposition), Density, Fuel elements, Graphite, Methane, Substrates, Texture, Very high temperature.

For abstract, see NSA 31 12, number 33720.

NMC-008 PC$7.00/MF$2.25
Nuclear Material Control Center, Tokyo (Japan).
Studies on the Nuclear-Matter Management System.
Mar 73, 80p
In Japanese. U.S. Sales Only.

Descriptors: (*Fissile materials, Safeguards), (*Safeguards, *Material unaccounted for), Japan.

For abstract, see NSA 31 12, number 34092.

NTO-A-0030(Sec.049)(Rev.1) PC$4.00/MF$2.25
NERVA Test Operations, Jackass Flats, Nev.
Ets-1 Area Control for a Non-Run Fueled Test Article Configuration. Revision 1.
4 Feb 69, 4p

Descriptors: (*Nerva reactor, Test facilities), (*Test facilities, *Security), Criticality, Fuel elements, Hot cells, Nuclear materials management, Operation, Shielding.

For abstract, see NSA 31 12, number 34101.

PB-241 674/1GA PC$5.75/MF$2.25
Battelle Pacific North Labs., Richland, Wash.
Significant Actinide Activities in the LWR and LMFBR Nuclear Fuel Cycles.
Final rept.,
C. M. Heeb, and E. T. Merrill. Oct 74, 142p
EPA/520/3-75-006
Contracts EPA-68-01-0495, EPA-68-01-1138

Descriptors: *Nuclear fuel cycles, *Actinide series, Radioactive wastes, Nuclear fuel reprocessing, Breeder reactors, Computation, Standard deviation, Tables(Data).
Identifiers: Liquid metal fast breeder reactors.

This study provides estimates of the time-dependent radioactivity characteristics of actinide isotopes in spent nuclear fuel, recovered plutonium and highlevel waste material from the fuel reprocessing plant. The estimates are provided for Light Water Reactors (LWRs) operating on a UO2 equilibrium fuel cycle, afirst recycle of the plutonium produced and a second plutonium recycle. In addition to these three LWR nuclear fuel cycle computations, a fourth set is given which corresponds to a Liquid Metal Fast Breeder Reactor (LMFBR) cycle operating with mixed oxide fuel. Four time periods were considered for each of the above categories: (1) 100 years, (2) 1,000 years, (3) 10,000 years, (4) 100,000 years. In addition, log-log graphs for the time period from 1 year to 1 x 10 to the 8th power years were included.

WANL-TME-2783 PC$9.75/MF$2.25
Westinghouse Electric Corp., Pittsburgh, Pa. Astronuclear Lab.
Materials Data Collection System for Use by Material and Design Groups.
Apr 71, 133p

Descriptors: (*Solids, Physical radiation effects), (*Physical radiation effects, *Data compilation), Computer codes, Nerva reactor, Physical properties.

For abstract, see NSA 31 12, number 33704.

WANL-TME-397 PC$4.00/MF$2.25
Westinghouse Electric Corp., Pittsburgh, Pa. Astronuclear Lab.
Additive Oxidation Test.
1 Jul 63, 15p

Descriptors: (*Graphite, *Oxidation), (*Nuclear fuels, Oxidation), Additives, Heat resisting alloys, Refractories, Time dependence.

For abstract, see NSA 31 12, number 33892.

Y-1454 PC$4.00/MF$2.25
Oak Ridge Y-12 Plant, Tenn.
Shielding Studies: Neutron Irradiation Damage to a Lithium Hydride Compact.
C. W. Hamill, and F. B. Waldrop. 14 Jan 64, 20p
Contract W-7405-eng-26

Descriptors: (*Lithium hydrides, *Physical radiation effects), Fast neutrons, Reactor components, Shields, Snap reactors, Swelling, Y-12 plant.

For abstract, see NSA 31 12, number 34050.

Y-1862 PC$4.25/MF$2.25
Oak Ridge Y-12 Plant, Tenn.
Method for Determining the Coefficient of Linear Thermal Expansion of Reactor Fuel Elements.
J. H. Smith. 18 Dec 72, 24p
Contract W-7405-eng-26

Descriptors: (*Uranium, Thermal expansion), (*Fuel elements, Thermal expansion), (*Thermal expansion, *Measuring methods), Absorption, Emissivity, Optical pyrometers.

For abstract, see NSA 31 12, number 33904.

18K. Reactor Physics

AD-A010 655/9GA PC$3.75/MF$2.25
Ballistic Research Labs Aberdeen Proving Ground Md
APRF Reactor 3 MeV (Sulfur) Threshold Neutron Fluence Measurements,
T. A. Dunn. May 75, 37p Rept no. BRL-1786

Descriptors: *Neutron flux, *Sulfur, Reactor cores, Fission neutrons.

The Army Pulse Radiation Facility (APRF) routinely uses sulfur pellets to measure the >3 MeV neutron fluence. This is usually called the sulfur fluence. The maximum sulfur fluence is obtained in the glory holes of the two APRF reactor configurations.

ARH-468(Rev.2) PC$4.00/MF$2.25
Atlantic Richfield Hanford Co., Richland, Wash.
Technical Criteria for the Prevention of Criticality.
H. P. Shaw. Feb 75, 12p
Contract AT(45-1)-2130

Descriptors: (*Fissile materials, *Criticality), Americium 241, Americium 242, Americium 243, Californium 244, Californium 251, Control, Curium 244, Curium 247, Neptunium 237, Plutonium 238, Plutonium 239, Plutonium 240, Plutonium 241, Uranium 233, Uranium 235.

For abstract, see NSA 31 12, number 34100.

KFK-2074 PC$6.00/MF$2.25
Kernforschungszentrum Karlsruhe (F.R. Germany). Inst. fuer Neutronenphysik und Reaktortechnik.
Monte Carlo Calculation of Ratios in Reactor Physics.
V. Brandl. Feb 75, 59p
In German. U.S. Sales Only.

Descriptors: (*Reactor kinetics, *Monte carlo method), Reactor kinetics equations.

For abstract, see NSA 31 12, number 35562.

WANL-TME-1933 PC$5.25/MF$2.25
Westinghouse Electric Corp., Pittsburgh, Pa. Astronuclear Lab.
Tests of the Ggc-3, Ggc-4 Neutron Slowing down Codes and Comparisons with the Codes Gamb1t and Transfer.
G. Gibson, and L. L. Moran. May 69, 42p

Descriptors: (*Reactor kinetics, Neutron slowing-down theory), (*Neutron slowing-down theory, *Cross sections), Comparative evaluations, Computer codes, G codes, Reactor kinetics equations, T codes.

For abstract, see NSA 31 12, number 35564.

WANL-TME-264 PC$4.00/MF$2.25
Westinghouse Electric Corp., Pittsburgh, Pa. Astronuclear Lab.
Crsave.
L. I. Ortenberg. 4 Dec 62, 20p

Descriptors: (*Reactor kinetics equations, *Group constants), (*Computer codes, *C codes), Fortran, Ibm computers, Nuclear data collections, Reactor kinetics.

For abstract, see NSA 31 12, number 35563.

WANL-TME-2781 PC$5.00/MF$2.25
Westinghouse Electric Corp., Pittsburgh, Pa. Astronuclear Lab.
User'S Manual for Dodapr (Dot Data Processing Code for Reactor Analysis).
J. A. Kyslinger. 11 Mar 71, 38p

Descriptors: (*Reactor kinetics equations, *Heat transfer), (*Computer codes, *D codes), Cdc computers, Data processing, Fortran, Neutron flux, Reactor kinetics.

For abstract, see NSA 31 12, number 35565.

WANL-TME-2782 PC$4.50/MF$2.25
Westinghouse Electric Corp., Pittsburgh, Pa. Astronuclear Lab.
User'S Manual for PERT-2D (Perturbation Theory, Two-Dimensional).
J. A. Kyslinger, and J. M. Ravets. 11 Mar 71, 26p

Descriptors: (*Reactor kinetics, *Perturbation theory), (*Computer codes, *P codes), Cdc computers, Fortran, Neutron flux, Two-dimensional calculations.

For abstract, see NSA 31 12, number 35566.

WANL-TMI-1121 PC$4.00/MF$2.25
Westinghouse Electric Corp., Pittsburgh, Pa. Astronuclear Lab.
Definition of Reactivity.
J. M. Ravets. 9 Jun 64, 9p

Descriptors: Criticality, Eigenvalues, Numerical solution, Reactivity.

For abstract, see NSA 31 12, number 35572.

WANL-TMI-1426 PC$4.00/MF$2.25
Westinghouse Electric Corp., Pittsburgh, Pa. Astronuclear Lab.
Two-Dimensional Diffusion Theory Code, Exterminator.
L. I. Kopp. 23 Mar 65, 6p

Descriptors: (*Reactor kinetics, *Neutron diffusion equation), (*Computer codes, *E codes), Multigroup theory, Reactor kinetics equations, Two-dimensional calculations.

For abstract, see NSA 31 12, number 35573.

WANL-TMI-1652 PC$4.00/MF$2.25
Westinghouse Electric Corp., Pittsburgh, Pa. Astronuclear Lab.
Pfinc: A Fortran-II Program for Preparing Pfence Input Tapes.
P. G. DeBaryshe. Mar 66, 14p

Descriptors: (*Reactor kinetics, Computer codes), (*Computer codes, *P codes), Neutron flux, Reactor kinetics equations.

For abstract, see NSA 31 12, number 35574.

WANL-TMI-687 PC$4.00/MF$2.25
Westinghouse Electric Corp., Pittsburgh, Pa. Astronuclear Lab.
Modification of Resonance Calculation in GAM-I Program, and Instructions for Gdtm Program.
C. A. Stevens. 14 Jun 63, 17p

Descriptors: (*Reactor kinetics, Computer codes), (*Computer codes, *G codes), Reactor kinetics equations.

For abstract, see NSA 31 12, number 35567.

WANL-TMI-713 PC$4.00/MF$2.25
Westinghouse Electric Corp., Pittsburgh, Pa. Astronuclear Lab.
Doodles, a Fortran Program for Computing Elastic Transfer Matrices for GAM-I Program.
G. A. Long, and C. A. Stevens. 25 Jun 63, 7p

Descriptors: (*Reactor kinetics, *Transfer matrix method), (*Computer codes, *D codes), G codes, Reactor kinetics equations.

For abstract, see NSA 31 12, number 35568.

WANL-TMI-758 PC$4.75/MF$2.25
Westinghouse Electric Corp., Pittsburgh, Pa. Astronuclear Lab.
General Study of Temperature Effects in Beryllium Reflected Graphite Reactors.
L. Kopp. 29 Jul 63, 32p

Descriptors: (*Graphite moderated reactors, *Reactor kinetics), Beryllium, Capture-to-fission ratio, Configuration, Neutron reflectors, Temperature coefficient.

For abstract, see NSA 31 12, number 35569.

WANL-TMI-856 PC$4.00/MF$2.25
Westinghouse Electric Corp., Pittsburgh, Pa. Astronuclear Lab.
Measurement of the Dollar Shutdown Reactivity in Highly Subcritical Configurations.
J. W. Riese. 7 Nov 63, 13p

Descriptors: (*Subcritical assemblies, Reactivity), (*Reactivity, *Measuring methods), Comparative evaluations, Reactor shutdown, Reviews.

For abstract, see NSA 31 12, number 35570.

WANL-TMI-902 PC$4.00/MF$2.25
Westinghouse Electric Corp., Pittsburgh, Pa. Astronuclear Lab.
Comments on Wanl-Tmi--856, Measurement of the Dollar Shutdown Reactivity in Highly Subcritical Configurations.
A. B. Rothman. 18 Dec 63, 7p

Descriptors: (*Subcritical assemblies, *Reactivity), Errors, Measuring methods.

For abstract, see NSA 31 12, number 35571.

WANL-TNR-045 PC$4.75/MF$2.25
Westinghouse Electric Corp., Pittsburgh, Pa. Astronuclear Lab.
Single Channel Analysis Program (Scap) for the Temperature Distribution in an Internally-Cooled Heat Generating Solid Cooled by a Compressible Gas.
B. L. Pierce. Feb 62, 35p

Descriptors: (*Gas cooled reactors, *Heat transfer), (*Computer codes, *S codes), Gas flow, Temperature distribution.

For abstract, see NSA 31 12, number 35575.

WANL-TR-6535 PC$4.00/MF$2.25
Westinghouse Electric Corp., Pittsburgh, Pa. Astronuclear Lab.
Trip to Oak Ridge National Laboratory, Oak Ridge, Tennessee.
R. K. Disney, and J. M. Carditio. 12 Oct 70, 10p

Descriptors: (*Reactor kinetics, Monte carlo method), (*Monte carlo method, *Meetings), A codes, Computer codes, M codes, Reactor kinetics equations.

For abstract, see NSA 31 12, number 35576.

18L. Reactors (Power)

PAT-APPL-560 891/GA PC$3.25/MF$2.25
National Aeronautics and Space Administration, Washington, D.C.
Nonequilibrium Radiation Nuclear Reactor.
Patent Application.
K. Thom, and R. T. Schneider. Filed 21 Mar 75, 18p NASA-CASE-HQN-10841-1
Subm-Sponsored by NASA.
Government-owned invention available for licensing. Copy of application available NTIS.

Descriptors: *Electromagnetic radiation, *Power, *Reactor design, *Thermal reactors, Laser outputs, *Patent applications, Pressure effects, Temperature effects.

An externally moderated themal nuclear reactor is disclosed which is designed to provide output power in the form of electromagnetic radiation. The reactor is a gaseous fueled nuclear cavity reactor device which can operate over wide ranges of temperature and pressure, and which includes the capability of processing and recycling waste products such as long-lived transuranium actinides. The primary output of the device may be in the form of coherent radiation, so that the reactor may be utilized as a self-critical nuclear pumped laser.

18N. Snap Technology

ACF-SA-727 PC$21.50/MF$2.25
ACF Industries, Inc., Albuquerque, N.Mex.
Privy Roof Mounted Shield and Shield Support. Design Progress Report.
L. P. Martin. 15 Jun 65, 368p

Descriptors: (*Nerva reactor, Shielding), (*Shielding, *Design), Stress analysis, Thermal stresses.

For abstract, see NSA 31 12, number 35218.

ACF-411-270 PC$5.00/MF$2.25
ACF Industries, Inc., Albuquerque, N.Mex.
Nrx-A4/Est Privy Roof Mounted Shield and Support Test Report.
C. E. Arnold. 29 Nov 65, 37p

Descriptors: (*Nrx-a4-est reactor, *Shielding), Supports, Testing.

For abstract, see NSA 31 12, number 35216.

ACF-431-135(Rev.1) PC$6.50/MF$2.25
ACF Industries, Inc., Albuquerque, N.Mex.
Scope of Work for Nerva-Nrx-a Reactors, AEC FY 66.
J. H. Stuever. 10 Sep 65, 68p

Descriptors: (*Nrx-a4-est reactor, *Research programs), (*Nrx-a5 reactor, Research programs), (*Nrx-a6 reactor, Research programs), Management, Planning.

For abstract, see NSA 31 12, number 35217.

AGC-1772 PC$18.25/MF$2.25
Bendix Corp., Southfield, Mich. Research Labs. Div.
Design Study of Engine Controls and Reactor Instrumentation for a Nuclear Flight Test Engine. Final Report.
3 Apr 61, 302p

Descriptors: (*Nerva reactor, *Reactor control systems), Actuators, After-heat removal, Design, Radiation doses, Radiation heating, Reactor instrumentation, Reactor shutdown, Reliability, Telemetry, Valves.

For abstract, see NSA 31 12, number 35220.

AGC-2014(Vol.5) PC$5.00/MF$2.25
Bendix Corp., Southfield, Mich. Research Labs. Div.
Bendix Nerva Program. Final Report, Phase I. Volume V. Technical Assistance to Aerojet-General Corporation.
10 Jan 62, 37p

Descriptors: (*Nerva reactor, Transducers), (*Transducers, *Radiation heating), Actuators, Data acquisition systems.

For abstract, see NSA 31 12, number 35221.

AGC-2220A PC$6.25/MF$2.25
Aerojet-General Corp., Sacramento, Calif.
Duct-Flow Visualization Studies Scale-Model Program for Test Cell "D" Exhaust System.
Aug 62, 61p

Descriptors: (*Nerva reactor, *Ducts), Exhaust gases, Flow models, Fluid flow.

For abstract, see NSA 31 12, number 35222.

AGC-2414(Vol.1) PC$8.75/MF$2.25
Aerojet-General Corp., Azusa, Calif.
Secondary Gas Generator System Preliminary Design. Volume I. Final Report.
J. M. Haygood. Nov 62, 115p

Descriptors: (*Nerva reactor, *Test facilities), Cost, Design.

For abstract, see NSA 31 12, number 35223.

AGC-746-15 PC$5.00/MF$2.25
Aerojet-General Corp., Sacramento, Calif.
Fundamental Frequencies of the Nerva Exhaust Duct Structure.
P. P. Soo. Jan 64, 36p

Descriptors: (*Nerva reactor, Test facilities), (*Test facilities, *Ducts), Exhaust gases, Resonance.

For abstract, see NSA 31 12, number 35219.

AI-AEC-12998 PC$7.50/MF$2.25
Atomics International Div., Canoga Park, Calif.
Snap Reactor Programs Progress Report, February--April 1971.
15 Jun 71, 88p
Contract AT(04-3)-701

Descriptors: (*S8dr reactor, *Performance testing), (*Snap reactors, *Research programs), Control elements, Fuel elements, Reactor materials, Specifications, Thermoelectric generators.

For abstract, see NSA 31 12, number 35224.

AI-AEC-13011 PC$8.00/MF$2.25
Atomics International Div., Canoga Park, Calif.
Snap Reactor Programs Progress Report, May--July 1971.
15 Sep 71, 97p
Contract AT(04-3)-701

Descriptors: (*Snap reactors, *Research programs), (*S8dr reactor, *Performance testing), Control elements, Fuel elements, Reactor materials, Specifications, Thermoelectric generators.

For abstract, see NSA 31 12, number 35225.

AN-1544 PC$7.50/MF$2.25
Aerojet-General Nucleonics, San Ramon, Calif.
Minerva: A Nuclear Rocket Steady State Systems Analysis Computer Code.
A. B. Burgess, and H. J. Snyder. Dec 66, 89p

Descriptors: (*Nerva reactor, Computer codes), (*Computer codes, *M codes), Performance, Reactor operation.

For abstract, see NSA 31 12, number 35227.

AN-924 PC$6.75/MF$2.25
Aerojet-General Corp., San Ramon, Calif.
Nerva Radiation Environment from Liquid Hydrogen.
G. H. Anno, and J. K. Witthaus. Apr 63, 71p

Descriptors: (*Nerva reactor, *Radiation doses), Computer calculations, Gamma radiation, Hydrogen, Neutron flux, Scattering.

For abstract, see NSA 31 12, number 35226.

ANS-90298B PC$4.25/MF$2.25
Aerojet Nuclear Systems Co., Azusa, Calif.
Development Specification: Mandrel, Graphite, Nozzle Extension, Nerva.
12 Jan 71, 22p

Descriptors: (*Nerva reactor, *Tools), Design, Fabrication, Graphite.

For abstract, see NSA 31 12, number 35228.

ANSC-F-PR06-A-727 PC$7.00/MF$2.25
Aerojet Nuclear Systems Co., Sacramento, Calif.
Fluidic Programmer I.R. And D., First Year Progress Report.
G. W. Felsing. Dec 70, 79p

Descriptors: (*Nerva reactor, *Fluidic control devices), Research programs.

For abstract, see NSA 31 12, number 35229.

ANSC-TER17-W389f PC$4.50/MF$2.25
Aerojet Nuclear Systems Co., Sacramento, Calif.
Logarithmic Force Feedback Study for Teleoperator Applications to Computer-Aided Teleoperator Systems. Research Suggestion.
F. L. Openshaw. Feb 71, 26p

Descriptors: (*Nerva reactor, Remote handling equipment), (*Remote handling equipment, *Research programs), Design.

For abstract, see NSA 31 12, number 35230.

APEX-908(Pt.B) PC$15.75/MF$2.25
General Electric Co., Cincinnati, Ohio Nuclear Materials and Propulsion Operation.
Xnj140e Nuclear Turbojet. Section 4. Reactor. Comprehensive Technical Report, General Electric Direct-Air-Cycle, Aircraft Nuclear Propulsion Program.
D. C. Layman. 15 May 62, 252p
Contract AT(11-1)-171

Descriptors: (*Aircraft propulsion reactors, *Control elements), Fuel elements, Neutron reflectors, Performance, Reactor cores, Reactor kinetics, Specifications.

For abstract, see NSA 31 12, number 35231.

BMI-X-10066 PC$4.00/MF$2.25
Battelle Columbus Labs., Ohio.
Guidelines for Development of a Test Design for Full-Flow Testing of the Nerva Propellant Feed System in a Simulated-Use Nuclear-Radiation Environment.
J. E. Drennan, A. E. Mace, and E. N. Wyler. 26 Nov 63, 15p
Contract W-7405-eng-92

Descriptors: (*Nerva reactor, *Reactor components), Design, Gas flow, Planning, Propellants, Simulation, Testing.

For abstract, see NSA 31 12, number 35232.

FZK-170-1 PC$18.25/MF$2.25
General Dynamics/Fort Worth, Tex.
Nerva Components Irradiation Program. Volume I. Gtr Test 4.
19 Jul 63, 303p

Descriptors: (*Nerva reactor, *Reactor instrumentation), Accelerometers, Amplifiers, Bearings, Displacement gages, Electric cables, Electric motors, Gtr reactor, Radiation effects, Strain gages, Thermometers, Transducers.

For abstract, see NSA 31 12, number 35233.

FZK-170-2 PC$11.00/MF$2.25
General Dynamics/Fort Worth, Tex.
Nerva Components Irradiation Program. Volume II. Astr Test 1.
R. D. Crabtree, and F. H. Johnson. 9 Dec 63, 158p

Descriptors: (*Nerva reactor, *Bearings), Astr reactor, Physical radiation effects, Seals, Testing, Valves.

For abstract, see NSA 31 12, number 35234.

FZK-170-4 PC$13.50/MF$2.25
General Dynamics/Fort Worth, Tex.
Nerva Components Irradiation Program. Volume IV. Gtr Test 7A.
20 Nov 63, 208p

Descriptors: (*Nerva reactor, *Reactor components), Physical radiation effects, Reactor instrumentation.

For abstract, see NSA 31 12, number 35235.

FZK-170-5 PC$8.50/MF$2.25
General Dynamics/Fort Worth, Tex.
Nerva Components Irradiation Program. Volume V. Astr Test 2.
W. M. Laney, and J. D. Stanley. 17 Dec 63, 106p

Descriptors: (*Nerva reactor, *Bearings), Astr reactor, Physical radiation effects, Pumps.

For abstract, see NSA 31 12, number 35236.

FZK-170-6 PC$8.00/MF$2.25
General Dynamics/Fort Worth, Tex.
Nerva Components Irradiation Program. Volume VI. Astr Test 3.
J. W. Guinn, and C. G. Pou. 20 Dec 63, 100p

Descriptors: (*Nerva reactor, *Bearings), Physical radiation effects, Pumps, Testing.

For abstract, see NSA 31 12, number 35237.

FZK-170-7 PC$10.00/MF$2.25
General Dynamics/Fort Worth, Tex.
Nerva Components Irradiation Program. Volume VII. Grt Test 9.
E. E. Chappell, J. S. Kunselman, and A. R. Green. 30 Dec 63, 137p

Descriptors: (*Nerva reactor, *Reactor instrumentation), Accelerometers, Actuators, Displacement gages, Gtr reactor, Physical radiation effects, Thermometers, Transducers.

For abstract, see NSA 31 12, number 35238.

FZK-170-8 PC$11.25/MF$2.25
General Dynamics/Fort Worth, Tex.
Nerva Components Irradiation Program. Volume 8. Gtr Test 10.
J. W. Evans, W. D. Jr. McMillan, and M. B. Walton. 30 Dec 63, 162p

Descriptors: (*Nerva reactor, *Reactor instrumentation), Accelerometers, Actuators, Amplifiers, Gtr reactor, Physical radiation effects, Testing, Transducers.

For abstract, see NSA 31 12, number 35239.

FZK-184-1 PC$9.75/MF$2.25
General Dynamics/Fort Worth, Tex.
Nerva Components Irradiation Program. Volume I. Gtr Test 11.
J. W. Evans, W. D. McMillan, E. E. Palmer, and A. B. Spears. 15 May 64, 132p

Descriptors: (*Nerva reactor, Displacement gages), (*Displacement gages, *Physical radiation effects), (*Strain gages, Physical radiation effects), Gtr reactor.

For abstract, see NSA 31 12, number 35240.

FZK-184-5 PC$14.50/MF$2.25
General Dynamics/Fort Worth, Tex.
Nerva Components Irradiation Program. Volume V. Astr Tests 4, 4A, and 5.
J. W. Guinn, C. G. Pou, and J. S. Wachowski. 11 Feb 65, 226p

Descriptors: (*Nerva reactor, *Bearings), Astr reactor, Physical radiation effects, Pumps, Testing.

For abstract, see NSA 31 12, number 35241.

FZK-184-6 PC$10.25/MF$2.25
General Dynamics/Fort Worth, Tex.
Nerva Components Irradiation Program. Volume VI. Gtr Test 15.
R. L. Burtnett, J. W. Evans, L. P. Stuart, and M. B. Walton. 19 Mar 65, 144p

Descriptors: (*Nerva reactor, *Reactor instrumentation), Connectors, Electric cables, Gtr reactor, Radiation effects, Strain gages, Thermocouples, Thermometers, Transducers.

For abstract, see NSA 31 12, number 35242.

FZK-310-1 PC$7.75/MF$2.25
General Dynamics/Fort Worth, Tex.
Nerva Irradiation Program. Volume I. Gtr Test 18, Components Test.
J. W. Guinn, and L. W. Nelms. 31 Aug 66, 92p

Descriptors: (*Nerva reactor, Transducers), (*Transducers, *Physical radiation effects), Gtr reactor, Hydrogen, Thermometers.

For abstract, see NSA 31 12, number 35243.

GA-8991 PC$5.50/MF$2.25
Gulf General Atomic Co., San Diego, Calif.
Effect of Coolant Loop Configuration Upon the Reliability of Thermoinic Reactor Systems.
C. A. Heath. 31 Mar 69, 50p
Contract AT(04-3)-167

Descriptors: (*Thermionic reactors, Primary coolant circuits), (*Primary coolant circuits, *Configuration), (*Space power reactors, Primary coolant circuits), Efficiency, Heat transfer.

For abstract, see NSA 31 12, number 35244.

GACP-4113 PC$5.00/MF$2.25
General Atomic Co., San Diego, Calif.
Proposal for Development of Snap Fuel Element Cladding.
25 Apr 63, 37p

Descriptors: (*Snap reactors, Fuel elements), (*Fuel elements, *Compatibility), (*Molybdenum, *Fuel cans), (*Tungsten, Fuel cans), Cost, Fuel-cladding interactions, Fuel-coolant interactions, Liquid metals, Personnel, Potassium alloys, Research programs, Sodium alloys, Uranium hydrides, Zirconium hydrides.

For abstract, see NSA 31 12, number 33871.

GEMP-357 PC$5.00/MF$2.25
General Electric Co., Cincinnati, Ohio Nuclear Materials and Propulsion Operation.
Development and Evaluation of a 1000 exp 0 C Yttrium Hydride Neutron Moderator.
W. G. Baxter, J. C. Marshall, and G. R. VanHouten. 16 Apr 65, 37p
Contract AT(40-1)-2847

Descriptors: (*Space power reactors, Reactor materials), (*Reactor materials, *Performance testing), (*Yttrium hydrides, *Fabrication), Physical radiation effects, Very high temperature.

For abstract, see NSA 31 12, number 35245.

GESR-2078(Vol.1) PC$25.75/MF$2.25
General Electric Co., Pleasanton, Calif. Nuclear Thermionic Power Operation.
Thermionic Reactor Design Report. Volume I. Design Analysis and Summary.
P. R. Hill, R. A. Becker, A. J. Gietzen, R. R. Hobson, and J. L. Jaech. 15 Oct 66, 453p
Contract AT(04-3)-189

Descriptors: (*Thermionic reactors, *Design), Fuel elements, Heat transfer, Hydraulics, Performance, Reactor cores, Reactor kinetics, Reliability, Specifications, Thermionic converters.

For abstract, see NSA 31 12, number 35246.

GESR-2118 PC$14.50/MF$2.25
General Electric Co., Pleasanton, Calif. Nuclear Thermionic Power Operation.
Development of a Space Thermionic Reactor Power Plant. Second Periodic Progress Report, November 1, 1968--February 28, 1969.
1969, 227p
Contract AT(04-3)-771

Descriptors: (*Space power reactors, *Fuel elements), (*Thermionic reactors, Fuel elements), Design, Performance testing, Physical radiation effects, Reactor materials, Research programs, Thermionic converters.

For abstract, see NSA 31 12, number 35247.

GESR-2122 PC$14.50/MF$2.25
General Electric Co., Pleasanton, Calif. Vallecitos Nuclear Center.
Development of a Space Thermionic Reactor Power Plant. Fourth Periodic Progress Report, July 1--October 31, 1969.
1969, 223p
Contract AT(04-3)-771

Descriptors: (*Space power reactors, *Reactor materials), (*Thermionic reactors, Reactor materials), Research programs, Thermionic fuel elements.

For abstract, see NSA 31 12, number 35248.

GESR-2124 PC$13.50/MF$2.25
General Electric Co., Pleasanton, Calif. Nuclear Thermionic Power Operation.
Development of a Space Thermionic Reactor Power Plant. Fifth Periodic Progress Report, November 1, 1969--February 28, 1970.
1970, 210p
Contract AT(04-3)-771

Descriptors: (*Space power reactors, *Fuel elements), (*Thermionic reactors, Fuel elements), Design, Electronic equipment, Performance testing, Physical radiation effects, Reactor control systems, Reactor materials, Research programs, Shielding, Thermionic converters.

For abstract, see NSA 31 12, number 35249.

GTR-12A PC$5.25/MF$2.25
General Dynamics/Fort Worth, Tex.
Irradiation Test, Preliminary Report.
24 Apr 64, 44p

Descriptors: (*Nerva reactor, *Reactor instrumentation), Electric cables, Gtr reactor, Physical radiation effects, Thermometers.

For abstract, see NSA 31 12, number 35252.

GTR-15 PC$5.00/MF$2.25
General Dynamics/Fort Worth, Tex.
Irradiation Test, Preliminary Report.
16 Dec 64, 36p

Descriptors: (*Nerva reactor, *Reactor instrumentation), Electric cables, Gtr reactor, Physical radiation effects, Strain gages, Testing, Thermocouples, Thermometers, Transducers.

For abstract, see NSA 31 12, number 35253.

GTR-4 PC$10.00/MF$2.25
General Dynamics/Fort Worth, Tex.
Irradiation Test, Preliminary Report.
12 May 63, 140p

Descriptors: (*Nerva reactor, *Reactor instrumentation), Accelerometers, Neutron detectors, Physical radiation effects, Strain gages, Testing, Transducers.

For abstract, see NSA 31 12, number 35250.

GTR-7A PC$7.00/MF$2.25
General Dynamics/Fort Worth, Tex.
Irradiation Test, Preliminary Report.
21 Aug 63, 78p

Descriptors: (*Nerva reactor, *Reactor instrumentation), Accelerometers, Actuators, Electric cables, Gtr reactor, Radiation effects, Strain gages, Thermocouples, Thermometers, Transducers.

For abstract, see NSA 31 12, number 35251.

LA-2897 PC$8.00/MF$2.25
Los Alamos Scientific Lab., N.Mex.
Radiochemical Measurements on Kiwi-B4a.
J. E. Sattizahn, and G. F. Wagner. May 63, 97p
Contract W-7405-ENG-36

Descriptors: (*Kiwi-b4a reactor, *Radiochemistry), Performance testing.

For abstract, see NSA 31 12, number 35254.

LA-3185-MS PC$20.50/MF$2.25
Los Alamos Scientific Lab., N.Mex.
Kiwi-B-4E-301 Preliminary Report.
M. Elder. 30 Oct 64, 348p
Contract W-7405-ENG-36

Descriptors: (*Kiwi-b4e reactor, *Performance testing), Nozzles.

For abstract, see NSA 31 12, number 35255.

LA-3231 PC$5.50/MF$2.25
Los Alamos Scientific Lab., N.Mex.
Static Physics of Rover Reactors.
C. B. Mills. Feb 65, 47p
Contract W-7405-eng-36

Descriptors: (*Rover reactors, *Reactor kinetics), Computer calculations, Criticality, Multiplication factors, Neutron transport, Power density, Reactivity.

For abstract, see NSA 31 12, number 35256.

LA-3464 PC$5.75/MF$2.25
Los Alamos Scientific Lab., N.Mex.
Phoebus 2 Add-on Afterheaters.
R. L. Seale. 1 Sep 65, 51p
Contract W-7405-ENG-36

Descriptors: (*Phoebus-2a reactor, *Design), Zirconium carbides.

For abstract, see NSA 31 12, number 35257.

LA-3598-MS PC$10.50/MF$2.25
Los Alamos Scientific Lab., N.Mex.
Quarterly Status Report of Lasl Rover Program for Period Ending August 31, 1966.
Sep 66, 149p
Contract W-7405-eng-36

Descriptors: (*Phoebus-1a reactor, *Performance testing), (*Phoebus-1b reactor, *Fuel elements), (*Phoebus-2a reactor, *Design), Loss of coolant, Rover reactors.

For abstract, see NSA 31 12, number 35258.

LA-3649 PC$4.00/MF$2.25
Los Alamos Scientific Lab., N.Mex.
Fabrication of Invar Wrapper Assembly for the Phoebus-1B Reactor.
W. C. Erickson. 15 Nov 66, 20p
Contract W-7405-ENG-36

Descriptors: (*Phoebus-1b reactor, *Graphite), Corrosion, Fabrication, Hydrogen.

For abstract, see NSA 31 12, number 35259.

LA-4344 PC$6.25/MF$2.25
Los Alamos Scientific Lab., N.Mex.
Lasl Rover Program, Quarterly Status Report for Period Ending November 30, 1969.
31 Dec 69, 65p
Contract W-7405-ENG-36

Descriptors: (*Pewee-2 reactor, *Design), Brazing, Computer calculations, Fuel elements, Graphite, Nozzles, Pewee-1 reactor, Phase diagrams, Test facilities.

For abstract, see NSA 31 12, number 35260.

LIB/Trans-547 PC$4.75/MF$2.25
Gesellschaft fuer Kernenergieverwertung in Schiffbau und Schiffahrt m.b.H., Geesthacht-Tesperhude (F.R. Germany).
Freon Tests for Determining Steady State Critical Heat Flux in a 36-Rod Cluster with Pwr Geometry.
H. Fulfs, and C. von Minden. Dec 74, 35p
Translation by L. Beattie of GKSS--74/E/24. U.S. Sales Only.

Descriptors: (*Ship propulsion reactors, *Critical heat flux), (*Pwr type reactors, Critical heat flux), Burnout, D codes, Freons, Fuel element clusters, Fuel rods, Geometry, Nuclear ships, Reactor simulators, Simulation, Water.

For abstract, see NSA 31 12, number 35261.

LRP-21 PC$9.75/MF$2.25
Aerojet-General Corp., Sacramento, Calif.
Nerva Monthly Letter Report, 27 February 1963--26 March 1963.
J. J. Peterson. 4 Apr 63, 135p

Descriptors: (*Nerva reactor, *Nozzles), Bearings, Pert method, Pressure vessels, Pumps, Stress analysis, Valves.

For abstract, see NSA 31 12, number 35262.

LRP-23 PC$10.25/MF$2.25
Aerojet-General Corp., Sacramento, Calif.
Nerva Monthly Letter Report, 27 April 1963--26 May 1963.
J. J. Peterson. 4 Jun 63, 142p

Descriptors: (*Nerva reactor, *Research programs), Bearings, Fabrication, Mechanical structures, Pert method, Pressure vessels, Radiation effects, Remote handling equipment, Testing.

For abstract, see NSA 31 12, number 35263.

MLM-1317 PC$4.75/MF$2.25
Mound Lab., Miamisburg, Ohio.
Plutonium-238 and Polonium-210 Radioisotope Fuels.
D. P. Kelly. 3 Jan 66, 35p
Contract AT(33-1)-GEN-53

Descriptors: (*Snap batteries, *Radioisotope heat sources), (*Plutonium 238, *Nuclear properties), (*Polonium 210, Nuclear properties), Fabrication, Physical properties.

For abstract, see NSA 31 12, number 33348.

MLM-1429 PC$7.50/MF$2.25
Mound Lab., Miamisburg, Ohio.
Mound Laboratory Isotopic Power Fuels Programs: July--September 1967.
12 Jan 68, 90p
Contract AT(33-1)-GEN-53

Descriptors: (*Radioisotope heat sources, *Research programs), (*Polonium 210, Radioisotope heat sources), (*Plutonium 238, Radioisotope heat sources), Capsules, Compatibility, Fabrication, Graphite, Haynes alloys, Helium, Leaks, Magnesium oxides, Zirconium oxides.

For abstract, see NSA 31 12, number 33349.

MLM-1454 PC$5.75/MF$2.25
Mound Lab., Miamisburg, Ohio.
Mound Laboratory Isotopic Power Fuels Programs: October--December 1967.
29 Mar 68, 53p
Contract AT-33-1-GEN-53

Descriptors: (*Radioisotope heat sources, *Research programs), (*Polonium 210, Radioisotope heat sources), (*Plutonium 238, Radioisotope heat sources), Capsules, Compatibility, Fabrication, Haynes alloys.

For abstract, see NSA 31 12, number 33350.

MLM-1493 PC$6.25/MF$2.25
Mound Lab., Miamisburg, Ohio.
Mound Laboratory Isotopic Power Fuels Programs: January--March 1968.
6 May 68, 62p
Contract AT-33-1-GEN-53

Descriptors: (*Radioisotope heat sources, *Research programs), (*Polonium 210, Radioisotope heat sources), (*Plutonium 238, Radioisotope heat sources), (*Capsules, *Fabrication), Compatibility, Haynes alloys, Helium, Plutonium oxides, Testing, Vents.

For abstract, see NSA 31 12, number 33351.

MLM-1527 PC$6.75/MF$2.25
Mound Lab., Miamisburg, Ohio.
Mound Laboratory Isotopic Power Fuels Programs: July--September 1968.
18 Nov 68, 75p
Contract AT-33-1-GEN-53

Descriptors: (*Radioisotope heat sources, *Research programs), (*Polonium 210, Radioisotope heat sources), (*Plutonium 238, Radioisotope heat sources), (*Capsules, *Fabrication), Helium, Nickel alloys, Testing, Vents.

For abstract, see NSA 31 12, number 33352.

MLM-1528 PC$7.50/MF$2.25
Mound Lab., Miamisburg, Ohio.
Mound Laboratory Isotopic Power Fuels Programs: October--December 1968.
31 Jan 69, 86p
Contract AT(33-1)-GEN-53

Descriptors: (*Radioisotope heat sources, *Research programs), (*Polonium 210, Radioisotope heat sources), (*Plutonium 238, Radioisotope heat sources), Capsules, Compatibility, Fabrication, Haynes alloys, Helium, Leaks, Promethium, Synthesis.

For abstract, see NSA 31 12, number 33353.

MLM-1607 PC$7.25/MF$2.25
Mound Lab., Miamisburg, Ohio.
Mound Laboratory Isotopic Power Fuels Programs: April--June 1969.
31 Jul 69, 82p
Contract AT-33-1-GEN-53

Descriptors: (*Radioisotope heat sources, *Research programs), (*Polonium 210, Radioisotope heat sources), (*Plutonium 238, Radioisotope heat sources), (*Capsules, *Fabrication), Alloy-tzm, Compatibility, Molybdenum alloys, Platinum alloys, Plutonium oxides, Rhenium alloys, Rhodium alloys, Testing, Tungsten alloys.

For abstract, see NSA 31 12, number 33354.

MLM-1613 PC$7.50/MF$2.25
Mound Lab., Miamisburg, Ohio.
Mound Laboratory Isotopic Power Fuels Programs: October--December 1969.
27 Feb 70, 90p
Contract AT-33-1-GEN-53

Descriptors: (*Plutonium 238, Radioisotope heat sources), (*Radioisotope heat sources, *Research programs), (*Capsules, *Design), Compatibility, Fabrication, Platinum, Platinum alloys, Rhodium alloys, Testing.

For abstract, see NSA 31 12, number 33355.

NJD-14 PC$10.50/MF$2.25
Aerojet-General Corp., Sacramento, Calif.
Nerva Policy and Interface Procedure Guide.
1970, 148p

Descriptors: (*Nerva reactor, *Management).

For abstract, see NSA 31 12, number 35264.

NSP-63-87 PC$5.50/MF$2.25
Lockheed Missiles and Space Co., Sunnyvale, Calif. Space Programs Div.
Nerva-Rift Thrust Vector Control/Mechanical/Shielding Interface Review Meeting.
9 Jul 63, 46p

Descriptors: (*Nerva reactor, *Interfaces), Control, Diagrams, Radiation doses, Reviews, Shielding.

For abstract, see NSA 31 12, number 35265.

NTO-A-0022 PC$10.50/MF$2.25
NERVA Test Operations, Jackass Flats, Nev.
Nerva Health and Safety Manual.
18 Jun 65, 149p

Descriptors: (*Nerva reactor, *Safety), Industrial medicine, Manuals, Test facilities.

For abstract, see NSA 31 12, number 35266.

NTO-I-0259 PC$4.50/MF$2.25
NERVA Test Operations, Jackass Flats, Nev.
Channel Engineering and Data System Evaluation for Nrx-A6. Final Issue.
30 Aug 67, 27p

Descriptors: (*Nrx-a6 reactor, *Data acquisition systems), Accelerometers, Calibration, Displacement gages, Reactor instrumentation, Strain gages, Testing, Thermocouples, Transducers.

For abstract, see NSA 31 12, number 35267.

NTO-I-0305 PC$4.25/MF$2.25
NERVA Test Operations, Jackass Flats, Nev.
Nrx-A6 Side-by-Side Pneumatic Actuator System Receiving Inspection, Installation, and Checkout. Final Issue.
16 Oct 67, 22p

Descriptors: (*Nrx-a6 reactor, *Actuators), Inspection, Pneumatic controllers.

For abstract, see NSA 31 12, number 35268.

NTO-I-0398 PC$10.25/MF$2.25
NERVA Test Operations, Jackass Flats, Nev.
Support Operational Requirements Document. Nrx-A6 Test Series.
10 Nov 67, 142p

Descriptors: (*Nrx-a6 reactor, *Test facilities), Management, Performance testing, Planning.

For abstract, see NSA 31 12, number 35269.

NTO-M-12863 PC$6.75/MF$2.25
NERVA Test Operations, Jackass Flats, Nev.
Xecf Rdr Recording and Display Requirements. Final Issue.
W. D. Wayne. 28 Sep 67, 73p

Descriptors: (*Xe-prime reactor, *Display devices), Data acquisition systems, Recording systems, Test facilities.

For abstract, see NSA 31 12, number 35271.

NTO-M-17153 PC$4.75/MF$2.25
NERVA Test Operations, Jackass Flats, Nev.
Nrx-A6 Facility Experimental Plan I.
R. D. Turner. 8 Aug 67, 34p

Descriptors: (*Nrx-a6 reactor, *Test facilities), Reactor shutdown, Reactor start-up, Simulation.

For abstract, see NSA 31 12, number 35272.

NTO-M-21896 PC$4.50/MF$2.25
NERVA Test Operations, Jackass Flats, Nev.
Transmittal of Semi-Monthly Progress Report. For the Period of April 1--April 15, 1968.
W. D. Wayne. 25 Apr 68, 28p

Descriptors: (*Nerva reactor, *Test facilities).

For abstract, see NSA 31 12, number 35273.

NTO-M-2677 PC$4.00/MF$2.25
NERVA Test Operations, Jackass Flats, Nev.
Reactivity Meter.
2 Mar 65, 9p

Descriptors: (*Nrx-a3 reactor, *Control rod worths), Reactivity meters.

For abstract, see NSA 31 12, number 35270.

NTO-R-0002 PC$4.75/MF$2.25
NERVA Test Operations, Jackass Flats, Nev.
Three-Day Report. Ep-Ib Nrx-A2 Test Series. Flow Tests.
S. N. Kemp. 10 Sep 64, 31p

Descriptors: (*Nrx-a2 reactor, *Testing), Flow rate, Power, Reactor start-up.

For abstract, see NSA 31 12, number 35274.

NTO-R-0032 PC$6.50/MF$2.25
NERVA Test Operations, Jackass Flats, Nev.
Three-Day Report for Experimental Plan VI. Alternate Startup, Medium Power Test. Nrx-A3 Test Series.
3 Jun 65, 69p

Descriptors: (*Nrx-a3 reactor, *Power density), Distribution, Flow rate, Reactor start-up, Testing.

For abstract, see NSA 31 12, number 35275.

NTO-R-0047 PC$9.00/MF$2.25
NERVA Test Operations, Jackass Flats, Nev.
Nrx/Est Facility Checkout Report.
9 Nov 65, 116p

Descriptors: (*Nrx-a4-est reactor, *Test facilities), Testing.

For abstract, see NSA 31 12, number 35276.

NTO-R-0052 PC$6.25/MF$2.25
NERVA Test Operations, Jackass Flats, Nev.
Nrx/Est Pre-Test Report.
T. O. Harves. 30 Dec 65, 63p

Descriptors: (*Nerva reactor, *Inspection), Testing.

For abstract, see NSA 31 12, number 35277.

NTO-R-0067 PC$6.25/MF$2.25
NERVA Test Operations, Jackass Flats, Nev.
Three-Day Report for Experimental Plan Iva. Engine Duration Test No. 2, Nrx/Est Test Series.
31 Mar 66, 61p

Descriptors: (*Nrx-a4-est reactor, *Performance testing), Reactor start-up.

For abstract, see NSA 31 12, number 35278.

NTO-R-0072 PC$9.50/MF$2.25
NERVA Test Operations, Jackass Flats, Nev.
Nrx-Est Site Test Report.
130p

Descriptors: (*Nrx-a4-est reactor, *Performance testing), Actuators, Bearings, Control rod worths, Freezing, Reactivity, Valves.

For abstract, see NSA 31 12, number 35279.

NTO-R-0084 PC$8.00/MF$2.25
NERVA Test Operations, Jackass Flats, Nev.
Site Test Report for the Nrx-A5 Test Series.
28 Jul 66, 100p

Descriptors: (*Nrx-a5 reactor, *Performance testing), Control rod worths.

For abstract, see NSA 31 12, number 35280.

NTO-R-0120 PC$9.50/MF$2.25
NERVA Test Operations, Jackass Flats, Nev.
Facility Checkout Report for Fep-1 Nrx-A6 Test Series.
14 Sep 67, 127p

Descriptors: (*Nrx-a6 reactor, *Test facilities), Inspection, Simulation.

For abstract, see NSA 31 12, number 35281.

NTO-R-0123 PC$9.50/MF$2.25
NERVA Test Operations, Jackass Flats, Nev.
Facility Checkout Report for Fep-11. Nrx-A6 Test Series, September 21, 1967.
21 Sep 67, 127p

Descriptors: (*Nrx-a6 reactor, *Performance testing), Pumps, Reactor shutdown, Reactor start-up, Transfer functions.

For abstract, see NSA 31 12, number 35282.

NTO-R-0126 PC$9.25/MF$2.25
NERVA Test Operations, Jackass Flats, Nev.
Facility Checkout Report for Fep-III Nrx-A6 Test Series.
19 Oct 67, 122p

Descriptors: (*Nrx-a6 reactor, *Test facilities), Testing.

For abstract, see NSA 31 12, number 35283.

NTO-R-0146 PC$11.75/MF$2.25
NERVA Test Operations, Jackass Flats, Nev.
Xecf Site Test Report.
20 Jun 68, 172p

Descriptors: (*Xe-prime reactor, *Test facilities), Testing.

For abstract, see NSA 31 12, number 35284.

NTO-R-0176 PC$4.00/MF$2.25
NERVA Test Operations, Jackass Flats, Nev.
Phoebus IIa Effluent Measurements. Final Issue.
R. A. Smith. 8 Jan 69, 12p

Descriptors: (*Phoebus-2a reactor, *Radioactive effluents), Particles, Photomicrography, Radiochemistry.

For abstract, see NSA 31 12, number 35285.

NTO-R-0182 PC$7.00/MF$2.25
NERVA Test Operations, Jackass Flats, Nev.
Consolidation of Nrx Reactor Fuel Elements and Hardware.
R. A. Smith. 28 Oct 69, 76p

Descriptors: (*Nerva reactor, Fuel elements), (*Fuel elements, *Radioactive waste disposal), Inventories, Radioactive waste storage, Underground disposal.

For abstract, see NSA 31 12, number 35286.

NUS-167 PC$5.50/MF$2.25
NUS Corp., Washington, D.C.
Particle Reentry Interactions.
R. S. Jr. Decker, and M. I. Goldman. 20 Jan 64, 46p

Descriptors: (*Nerva reactor, *Reentry), (*Skin, *Biological radiation effects), (*Lungs, Biological radiation effects), (*Gastrointestinal tract,

Biological radiation effects), Environmental effects, Fragmentation, Radiation doses.

For abstract, see NSA 31 12, number 35287.

NUS-203 PC$6.00/MF$2.25
NUS Corp., Washington, D.C.
Further Studies on Fragment Behavior Following a Reactor Explosive Destruct.
H. Firstenberg. Nov 64, 57p

Descriptors: (*Nerva reactor, *Fragmentation), Chemical explosions, Distribution, Mathematical models, Particle size.

For abstract, see NSA 31 12, number 35288.

RN-DR-0103(Vol.2)(Appx.A) PC$6.50/MF$2.25
Aerojet-General Corp., Sacramento, Calif.
Nerva Engine Development Program Plan. Appendix a to Volume II. Turbopump Optimization and Final Design.
May 67, 66p

Descriptors: (*Nerva reactor, Pumps), (*Pumps, *Design), Optimization, Turbines.

For abstract, see NSA 31 12, number 35292.

RN-DR-0122 PC$4.00/MF$2.25
Aerojet-General Corp., Sacramento, Calif.
Nerva Support Equipment: Operating and Maintenance Instructions for Turbine Exhaust Nozzle Closure-4108.
Nov 67, 16p

Descriptors: (*Nerva reactor, *Leak testing), Manuals, Nozzles, Seals, Turbines.

For abstract, see NSA 31 12, number 35293.

RN-DR-0181A PC$6.50/MF$2.25
Aerojet Nuclear Systems Co., Sacramento, Calif.
Design Requirement Sheets for the Thrust-Structure Subsystem, EC 90152.
Apr 70, 66p

Descriptors: (*Nerva reactor, *Mechanical structures), Design.

For abstract, see NSA 31 12, number 35294.

RN-DR-0182A PC$4.25/MF$2.25
Aerojet Nuclear Systems Co., Sacramento, Calif.
Design Requirement Sheets for the External-Shield Subsystem, EC 90243.
Apr 70, 25p

Descriptors: (*Nerva reactor, *Shielding), Design.

For abstract, see NSA 31 12, number 35295.

RN-DR-0185A PC$7.00/MF$2.25
Aerojet Nuclear Systems Co., Sacramento, Calif.
Design Requirement Sheets for the Nuclear Subsystem, Cp 677555.
Apr 70, 79p

Descriptors: (*Nerva reactor, *Specifications), Design, Valves.

For abstract, see NSA 31 12, number 35296.

RN-DR-702 PC$17.00/MF$2.25
NERVA Test Operations, Jackass Flats, Nev.
Spear Team Report, Xecf EP-2.
11 Apr 68, 277p

Descriptors: (*Xe-prime reactor, *Testing), Pumps, Reactor start-up, Simulation.

For abstract, see NSA 31 12, number 35297.

RN-Q-0036 PC$7.00/MF$2.25
Aerojet-General Corp., Sacramento, Calif.
Reliability and Quality Assurance Supplement for Fourth Quarter, CY 1965. Supplement No. 36A.
31 Oct 65, 79p

Descriptors: (*Nerva reactor, *Quality assurance), Inspection, Management, Quality control, Reliability.

For abstract, see NSA 31 12, number 35298.

RN-S-0510(Vol.2) PC$27.25/MF$2.25
Aerojet Nuclear Systems Co., Sacramento, Calif.
Xe-Prime Engine Final Report. Volume II. Assembly, Test, and Disassembly Operations.
Apr 70, 482p

Descriptors: (*Xe-prime reactor, *Performance testing), Construction, Reactor dismantling.

For abstract, see NSA 31 12, number 35299.

RN-S-0559 PC$7.25/MF$2.25
Aerojet Nuclear Systems Co., Sacramento, Calif.
Propulsion/Electrical Power Generation (Including Wanl Project 495). Project 395.
Apr 70, 82p

Descriptors: (*Nerva reactor, *Rankine cycle power systems), Electric power, Thiophene.

For abstract, see NSA 31 12, number 35300.

RN-TM-0210 PC$4.00/MF$2.25
Aerojet-General Corp., Sacramento, Calif.
Nerva Test Report, Diluent Control Valve (Dcv) p/N 278100-59, S/N 014 LH sub 2 Flow and Functional Tests.
A. J. Betz, and A. V. Lundback. 1 Jul 65, 12p

Descriptors: (*Nerva reactor, *Valves), Testing.

For abstract, see NSA 31 12, number 35301.

RN-TM-0212 PC$4.00/MF$2.25
Aerojet-General Corp., Sacramento, Calif.
Nerva Mark III MOD 4 Pump Effect of Backvane Flow on Pump Efficiency.
T. Nishioka. 22 Sep 65, 14p

Descriptors: (*Nerva reactor, *Pumps), Efficiency, Fluid flow, Testing.

For abstract, see NSA 31 12, number 35302.

RN-TM-0234 PC$5.25/MF$2.25
Aerojet-General Corp., Sacramento, Calif.
Hot Bleed Vent Valve Assembly, Acceptance Test Report.
F. G. Lachnitt. 2 Nov 65, 44p

Descriptors: (*Nrx-a4-est reactor, *Valves), Testing.

For abstract, see NSA 31 12, number 35303.

RN-TM-0291 PC$7.00/MF$2.25
Aerojet-General Corp., Sacramento, Calif.
Nrx and Nrx/Est Gimbaled Bellows.
R. W. Thomas, and L. D. Johnson. 12 May 66, 79p

Descriptors: (*Nerva reactor, *Bellows), Pipelines, Propellants, Pumps, Testing.

For abstract, see NSA 31 12, number 35304.

RN-TM-0299 PC$4.00/MF$2.25
Aerojet-General Corp., Sacramento, Calif.
Cold Flow Development Test System (Cfdts) Test Series II and III Data Summary.
G. B. Smyth. 20 Dec 65, 16p

Descriptors: (*Nerva reactor, *Testing), Fluid flow.

For abstract, see NSA 31 12, number 35305.

RN-TM-0323 PC$4.00/MF$2.25
Aerojet-General Corp., Sacramento, Calif.
Evaluation of the Nrx-A3 Propellant Feed Line.
R. E. Locke. 28 Feb 66, 10p

Descriptors: Fluid flow, Heat transfer, Nrx-a3 reactor, Performance, Pipes, Temperature dependence.

For abstract, see NSA 31 12, number 35306.

RN-TM-0352 PC$4.00/MF$2.25
Aerojet-General Corp., Sacramento, Calif.
Test Specification for the X-Engine Remote Assembly Design Aid (Rada).
F. Shrade. 10 May 66, 11p

Descriptors: (*Nerva reactor, *Remote handling equipment), Construction, Inspection, Reactor dismantling, Specifications, Testing.

For abstract, see NSA 31 12, number 35307.

RN-TM-0354 PC$4.25/MF$2.25
Aerojet-General Corp., Sacramento, Calif.
Nerva Injector Development Test Summary for Contract Year 1965.
R. B. Wright. 19 May 66, 25p

Descriptors: (*Nerva reactor, *Nozzles), Simulation, Testing.

For abstract, see NSA 31 12, number 35308.

RN-66250(Vol.1) PC$11.25/MF$2.25
Aerojet-General Corp., Sacramento, Calif.
Synthesis of Calculation Methods for the Design and Analysis of Radiation Shields for Nuclear Rocket Systems. Volume I. Technical.
Mar 66, 161p

Descriptors: (*Nerva reactor, Shielding), (*Shielding, *Computer calculations), Design.

For abstract, see NSA 31 12, number 35289.

RN-71001C(Appx.B)(Suppl.) PC$10.25/MF$2.25
Aerojet-General Corp., Sacramento, Calif.
Statement of Work Covering the Period October 1, 1970--September 30, 1972. Supplement A71/72C to Appendix B.
18 Jun 71, 144p

Descriptors: (*Nerva reactor, *Management), Research programs.

For abstract, see NSA 31 12, number 35290.

RN-71008(Vol.1)(Rev.B) PC$6.50/MF$2.25
Aerojet Nuclear Systems Co., Sacramento, Calif.
Preface and Work Statements, October 1, 1970--September 30, 1972. Volume I. Revision B.
May 71, 68p

Descriptors: (*Nerva reactor, *Management), Research programs.

For abstract, see NSA 31 12, number 35291.

RP-MR-0007 PC$5.25/MF$2.25
Aerojet-General Corp., Sacramento, Calif.
Phoebus-2 Monthly Progress Report for the Period of 1 December--31 December 1965.
Jan 66, 44p

Descriptors: (*Phoebus-2a reactor, *Nozzles), (*Hastelloy x, *Mechanical properties), Heat transfer, Test facilities, Welding.

For abstract, see NSA 31 12, number 35309.

RP-QR-0002 PC$12.25/MF$2.25
Aerojet-General Corp., Sacramento, Calif.
Phoebus-2 Quarterly Report for the Period of 1 September--30 November 1965.
Dec 65, 183p

Descriptors: (*Phoebus-2a reactor, *Nozzles), (*Hastelloy x, *Mechanical properties), Heat transfer, Simulation, Stress analysis, Welding.

For abstract, see NSA 31 12, number 35310.

RP-TM-0002 PC$5.25/MF$2.25
Aerojet-General Corp., Sacramento, Calif.
Phoebus-2. Gh sub 2 Disposal System. Scale Burn Pond Test Program Presentation.
5 Jan 66, 43p

Descriptors: (*Phoebus-2a reactor, *Hydrogen), (*Exhaust gases, *Waste disposal), Combustion, Safety.

For abstract, see NSA 31 12, number 35311.

RRA-T-708 PC$6.75/MF$2.25
Radiation Research Associates, Inc., Fort Worth, Tex.
Monte Carlo Calculations of gamma-Ray Kerma Rates in Nerva Payload Configurations.
J. H. Price, and M. B. Wells. 1 Jun 70, 74p

Descriptors: (*Nerva reactor, *Radiation doses), Gamma radiation, Kerma, Monte carlo method, Shielding.

For abstract, see NSA 31 12, number 35312.

RRA-T-710 PC$9.00/MF$2.25
Radiation Research Associates, Inc., Fort Worth, Tex.
Monte Carlo Calculations of gamma-Ray Kerma Rates in Nerva Payload Configurations with Extended Propulsion Module.
J. K. Warkentin, J. H. Price, and M. B. Wells. 1 Jul 70, 119p

Descriptors: (*Nerva reactor, *Radiation doses), Gamma radiation, Kerma, Monte carlo method, Shielding.

For abstract, see NSA 31 12, number 35313.

SC-TM-64-947 PC$7.25/MF$2.25
Sandia Labs., Albuquerque, N.Mex.
Snap-9A Incident Summary.
23 Jun 64, 84p RS-7411/2

Descriptors: (*Snap 9 battery, *Reentry), Plutonium 238, Power supplies, Satellites, Thermoelectric generators.

For abstract, see NSA 31 12, number 33357.

TCD-9660-005 PC$4.00/MF$2.25
Aerojet-General Corp., Sacramento, Calif.
U-Tube Nozzle Test Plan.
C. M. Kawashige. 3 Mar 64, 17p

Descriptors: (*Nerva reactor, *Nozzles), Simulation, Testing.

For abstract, see NSA 31 12, number 35314.

TCR-9616-018(PL1) PC$7.75/MF$2.25
Aerojet-General Corp., Sacramento, Calif.
Phase II Heat Transfer Analyses on Nerva Thrust Chamber. Part I.
J. N. Hester. 29 Nov 62, 93p

Descriptors: (*Nerva reactor, *Pressure vessels), Aluminium, Heat transfer, Nozzles, Titanium.

For abstract, see NSA 31 12, number 35315.

TID/SNA-1028 PC$4.25/MF$2.25
Los Alamos Scientific Lab., N.Mex.
Semimonthly Progress Report, 16 April--30 April 1968.
1968, 24p

Descriptors: (*Nerva reactor, *Test facilities), (*Phoebus-2a reactor, *Performance testing).

For abstract, see NSA 31 12, number 35357.

TID/SNA-1034 PC$4.00/MF$2.25
Los Alamos Scientific Lab., N.Mex.
Semimonthly Progress Report, 1 May--16 May 1968.
1968, 22p

Descriptors: (*Phoebus-2a reactor, *Test facilities), Reliability, Safety.

For abstract, see NSA 31 12, number 35358.

TID/SNA-1037 PC$4.25/MF$2.25
NERVA Test Operations, Jackass Flats, Nev.
Semi-Monthly Progress Report, 16 May--31 May 1968.
May 68, 25p

Descriptors: (*Phoebus-2a reactor, *Performance testing), Safety, Test facilities.

For abstract, see NSA 31 12, number 35359.

TID/SNA-1040 PC$4.25/MF$2.25
Syracuse Univ. Research Inst., N.Y.
Nerva Adhesion Test. Semi-Annual Report.
R. G. Aldrich. Dec 67, 23p

Descriptors: (*Nerva reactor, *Testing), Adhesion.

For abstract, see NSA 31 12, number 35360.

TID/SNA-1041 PC$4.25/MF$2.25
NERVA Test Operations, Jackass Flats, Nev.
Xecf Engine Disassembly.
22 Jul 68, 21p

Descriptors: (*Xe-prime reactor, *Reactor dismantling), Specifications, Storage, Test facilities.

For abstract, see NSA 31 12, number 35361.

TID/SNA-1090 PC$4.75/MF$2.25
Aerojet-General Corp., Sacramento, Calif.
Summary of Engine Design and Analytical Studies to Mature the 1137400E Engine Baseline. Project 110, Paragraph 3.
D. E. Kleinert, and W. A. Lester. May 72, 31p

Descriptors: (*Nerva reactor, *Design).

For abstract, see NSA 31 12, number 35362.

TID/SNA-1091 PC$7.00/MF$2.25
Aerojet Nuclear Systems Co., Sacramento, Calif.
Engineering Operations Report: Mission Performance Summary and Applicability of 400E Technology to Small Engine.
J. R. DaVolio. Jun 72, 77p

Descriptors: (*Nerva reactor, *Comparative evaluations), (*Valves, *Leaks), Design, Optimization, Performance, Planning, Reactor operation, Reactor start-up, Weight.

For abstract, see NSA 31 12, number 35363.

TID/SNA-1096 PC$12.75/MF$2.25
Aerojet Nuclear Systems Co., Sacramento, Calif.
Engineering Operations Report: Nerva 400E Thrust Train Dynamic Analysis.
D. F. Vronay. 14 Apr 72, 192p

Descriptors: (*Nerva reactor, *Mechanical vibrations), Computer calculations, Resonance, Stress analysis.

For abstract, see NSA 31 12, number 35364.

TID/SNA-1115 PC$13.00/MF$2.25
Aerojet Nuclear Systems Co., Sacramento, Calif.
Technical Directives and Change Orders from Snpo to the Contractor.
J. J. Pozarek. 19 Oct 70, 198p

Descriptors: (*Nerva reactor, *Management), Planning.

For abstract, see NSA 31 12, number 35365.

TID/SNA-1127 PC$4.00/MF$2.25
National Aeronautics and Space Administration, Cleveland, Ohio Lewis Research Center.
Engine/Component Design Status Review Action Items and Comments.
R. W. Schroeder. 27 May 71, 6p

Descriptors: (*Nerva reactor, *Design), Contracts, Specifications.

For abstract, see NSA 31 12, number 35366.

TID/SNA-1129 PC$4.00/MF$2.25
Interface Control Method Study.
18p

Descriptors: (*Nerva reactor, *Interfaces), Comparative evaluations, Control, Design.

For abstract, see NSA 31 12, number 35367.

TID/SNA-1130 PC$4.00/MF$2.25
Aerojet Nuclear Systems Co., Sacramento, Calif.
Preparation of Mrl C101b.
J. R. DaVolio. 11 Jan 72, 11p

Descriptors: (*Nerva reactor, *Management).

For abstract, see NSA 31 12, number 35368.

TID/SNA-1135 PC$4.00/MF$2.25
Aerojet Nuclear Systems Co., Sacramento, Calif.
Nerva Flight Instrumentation.
N. A. Edlebeck. 29 Dec 71, 8p

Descriptors: (*Nerva reactor, Pumps), (*Pumps, *Measuring instruments), Performance, Planning.

For abstract, see NSA 31 12, number 35369.

TID/SNA-1146 PC$4.00/MF$2.25
Aerojet Nuclear Systems Co., Sacramento, Calif.
Revised Internal Leakage Rates Allowable for 1137400/Rev. E Reference Engine Valves.
L. D. Johnson. 11 May 71, 3p

Descriptors: (*Nerva reactor, *Valves), Flow rate, Leaks, Specifications.

For abstract, see NSA 31 12, number 35370.

TID/SNA-1150 PC$4.00/MF$2.25
Aerojet Nuclear Systems Co., Sacramento, Calif.
Engineering Operations Report: Preliminary Guidelines for Engine Conditions During Propellant Settling, Project 100, Work Statement 6F.
J. H. Altseimer. 30 Aug 71, 15p

Descriptors: (*Nerva reactor, *Reactor start-up), Propellants.

For abstract, see NSA 31 12, number 35371.

TID/SNA-1152 PC$10.00/MF$2.25
Bendix Corp., South Bend, Ind. Bendix Products Aerospace Div.
Nerva Reliability and Quality Assurance Program Plans. Part I. Nerva Reliability Program Plan. Part II. Nerva Quality Program Plan. Part III. Addenda.
N. J. Veit. 30 Aug 63, 138p

Descriptors: (*Nerva reactor, *Quality assurance), Planning, Reliability.

For abstract, see NSA 31 12, number 35372.

TID/SNA-1153 PC$11.75/MF$2.25
Aerojet-General Corp., Sacramento, Calif.
Project alpha Nuclear Propulsion System Pressure Vessel. Preliminary Design. Volume II.
E. L. Croy. 28 Feb 61, 173p

Descriptors: (*Nerva reactor, *Pressure vessels), Design, Optimization, Space propulsion reactors, Stress analysis, Weight.

For abstract, see NSA 31 12, number 35373.

TID/SNA-1158 PC$4.25/MF$2.25
NERVA Test Operations, Jackass Flats, Nev.
Nto Semi-Monthly Progress Report for the Period of February 16--29, 1968.
W. D. Wayne. 12 Mar 68, 24p

Descriptors: (*Nerva reactor, *Test facilities).

For abstract, see NSA 31 12, number 35374.

TID/SNA-1163 PC$4.25/MF$2.25
Aerojet-General Corp., Sacramento, Calif.
Nerva Vibrational Program. Preliminary Report.
R. L. Severson. 18 Jan 63, 22p

Descriptors: (*Nerva reactor, *Mechanical vibrations), Mechanical structures.

For abstract, see NSA 31 12, number 35375.

TID/SNA-1165 PC$4.00/MF$2.25
Aerojet-General Corp., Azusa, Calif.
Nuclear Rocket Sizing Study, Summary Briefing.
H. L. Johnson, and R. D. Waldo. 15 Jul 63, 16p

Descriptors: (*Nerva reactor, *Size), Diagrams, Optimization, Weight.

For abstract, see NSA 31 12, number 35376.

TID/SNA-1180 PC$13.50/MF$2.25
Aerojet-General Corp., Azusa, Calif.
Revised Work Statement.
20 May 64, 208p

Descriptors: (*Nerva reactor, *Planning), Research programs.

For abstract, see NSA 31 12, number 35377.

TID/SNA-1184 PC$9.75/MF$2.25
Aerojet-General Corp., Sacramento, Calif.
Lrp Contributions to the Nerva Program Planning and Cost Study for Contract Year 1963.
I. L. Odgers. 24 Oct 62, 135p

Descriptors: (*Nerva reactor, *Planning), Management, Research programs.

For abstract, see NSA 31 12, number 35378.

TID/SNA-1186 PC$8.75/MF$2.25
Aerojet-General Corp., Sacramento, Calif.
Snp-1SA3 Contract Monthly Letter Report for the Period 27 November 1963--26 December 1963.
J. J. Peterson. 6 Jan 64, 113p

Descriptors: (*Nerva reactor, *Reactor components), Design, Testing.

For abstract, see NSA 31 12, number 35379.

TID/SNA-1187 PC$9.25/MF$2.25
Aerojet-General Corp., Sacramento, Calif.
Snp-1SA3 Contract Monthly Letter Report for the Period 27 October 1963--26 November 1963.
J. J. Peterson. 14 Dec 63, 121p

Descriptors: (*Nerva reactor, Reactor components), (*Reactor components, *Design), (*Reactor instrumentation, *Testing), Fabrication, Mechanical structures, Nozzles, Pressure vessels.

For abstract, see NSA 31 12, number 35380.

TID/SNA-1189 PC$10.00/MF$2.25
Aerojet-General Corp., Sacramento, Calif.
Snp-1: Work Statement. Period Covered, March 1, 1964--September 30, 1964.
1 Mar 64, 136p

Descriptors: (*Nerva reactor, *Management), Research programs.

For abstract, see NSA 31 12, number 35381.

TID/SNA-1191 PC$5.00/MF$2.25
Aerojet-General Corp., Sacramento, Calif.
Current Status of Scale-Model Duct Program for Nerva Exhaust Disposal System. Revision 1.
B. L. McFarland, R. E. Nelson, and G. O. Patmor. 21 Jun 62, 36p

Descriptors: (*Nerva reactor, *Test facilities), Ducts, Exhaust gases, Functional models.

For abstract, see NSA 31 12, number 35382.

TID/SNA-1198 PC$22.00/MF$2.25
Aerojet-General Corp., Sacramento, Calif.
Phoebus-2 Pressure/Vessel Nozzle Interface Analysis. Appendix to Part IV. Stress Analysis.
27 Jul 65, 380p

Descriptors: (*Phoebus-2a reactor, *Interfaces), Nozzles, Pressure vessels, Stress analysis, Temperature gradients.

For abstract, see NSA 31 12, number 35383.

TID/SNA-1199 PC$4.25/MF$2.25
Aerojet-General Corp., Sacramento, Calif.
N-4 Progress Report for Period 21 July--20 August 1965.
1965, 22p

Descriptors: (*Phoebus-1a reactor, *Research programs), Nerva reactor, Reactor control systems, Reactor instrumentation, Thermocouples, Transfer functions.

For abstract, see NSA 31 12, number 35384.

TID/SNA-1203 PC$9.50/MF$2.25
Aerojet-General Corp., Sacramento, Calif.
Nrx-A5 Dragon Memoranda for Experimental Plan III.
130p

Descriptors: (*Nrx-a5 reactor, *Data processing), Performance testing.

For abstract, see NSA 31 12, number 35385.

TID/SNA-1207 PC$4.00/MF$2.25
TRW, Inc., Cleveland, Ohio.
Nerva Space Environment Assessment (Phase I).
R. L. Hammel. 1 Sep 67, 20p

Descriptors: (*Nerva reactor, *Environmental effects), Space flight, Temperature gradients.

For abstract, see NSA 31 12, number 35386.

TID/SNA-1208 PC$4.00/MF$2.25
Oak Ridge National Lab., Tenn.
Adhesion Tests, Progress Report IV.
R. E. Clausing. 11 Sep 67, 4p

Descriptors: (*Nerva reactor, *Reactor materials), (*Stainless steel-440, *Adhesion), Testing.

For abstract, see NSA 31 12, number 35387.

TID/SNA-1211 PC$4.25/MF$2.25
Aerojet-General Corp., Sacramento, Calif.
Test Plan for the Nrx-a Non-Nuclear Assembly Structural Acceptance Tests.
R. W. Thomas. 17 May 63, 23p

Descriptors: (*Nrx-a2 reactor, *Nozzles), Inspection, Pressure vessels, Testing.

For abstract, see NSA 31 12, number 35388.

TID/SNA-1212 PC$4.50/MF$2.25
Aerojet-General Corp., Sacramento, Calif.
Hot Bleed Development Test Plan.
6 Apr 64, 30p

Descriptors: (*Nerva reactor, *Nozzles), Simulation, Testing.

For abstract, see NSA 31 12, number 35389.

TID/SNA-1216 PC$10.75/MF$2.25
Aerojet-General Corp., Sacramento, Calif.
Cast Aluminum Alloy Jacket Materials Development Program for the Nerva Nozzle. First Summary Status Report for Period May--September 1962.
F. T. Inouye. 26 Mar 63, 153p

Descriptors: (*Aluminium base alloys, *Bonding), (*Gold, Bonding), (*Silver, Bonding), (*Nickel, Bonding), Copper, Fabrication, Gold alloys, Jackets, Nerva reactor, Nickel alloys, Nozzles.

For abstract, see NSA 31 12, number 35390.

TID/SNA-1217 PC$12.25/MF$2.25
Aerojet-General Corp., Sacramento, Calif.

Nerwi Hydrostatic Test Structural Evaluation Report.
R. W. Thomas. 5 Sep 63, 181p

Descriptors: (*Kiwi-b1a reactor, *Nozzles), Failures, Pressure vessels, Stress analysis, Testing.

For abstract, see NSA 31 12, number 35391.

TID/SNA-1221 PC$13.75/MF$2.25
Aerojet-General Corp., Sacramento, Calif.
Lrp Input for the Cold Flow Development Test System Test Program Plan.
10 Sep 63, 212p

Descriptors: (*Nerva reactor, *Test facilities), Mathematical models, Mockup, Simulation.

For abstract, see NSA 31 12, number 35392.

TID/SNA-1223 PC$4.00/MF$2.25
Aerojet-General Corp., Sacramento, Calif.
Test Specifications and Procedures for Nerva Thrust Structure S/N 001TS Resonance Survey.
J. N. Locke. 15 Apr 63, 14p

Descriptors: (*Nerva reactor, *Mechanical structures), Mechanical vibrations, Resonance, Specifications, Testing.

For abstract, see NSA 31 12, number 35393.

TID/SNA-1224 PC$4.00/MF$2.25
Aerojet-General Corp., Sacramento, Calif.
Test Plan for the Nerwi Hydrostatic Test.
S. J. Brown. 27 Aug 62, 20p

Descriptors: (*Kiwi-b1a reactor, *Nozzles), (*Nerva reactor, Nozzles), Inspection, Planning, Pressure gradients, Pressure vessels, Testing.

For abstract, see NSA 31 12, number 35394.

TID/SNA-1227 PC$4.50/MF$2.25
Component Evaluation Labs., El Monte, Calif. Electronic Div.
Nerva Nrxa-Icf Instrumentation Environmental Performance Test of Three (3) Clevite Accelerometers, Piezoelectric Type, Model 25D2IX, Serial Nos. 5189, 5192, and 5193.
28p

Descriptors: (*Nrx-a1 reactor, *Reactor instrumentation), Accelerometers, Performance testing.

For abstract, see NSA 31 12, number 35395.

TID/SNA-1237 PC$4.00/MF$2.25
Aerojet-General Corp., Sacramento, Calif.
Nerva Support Equipment Operation and Maintenance Instructions.
30 Apr 64, 15p

Descriptors: (*Nerva reactor, *Remote handling equipment), Lubrication, Maintenance, Manuals, Tools.

For abstract, see NSA 31 12, number 35396.

TID/SNA-1243 PC$5.25/MF$2.25
Aerojet-General Corp., Sacramento, Calif.
Test Specifications for the Static Structural Test of the Nerva Titanium Pressure Vessel, S/N 001T.
F. J. Hales. 17 Jun 63, 42p

Descriptors: (*Nerva reactor, *Pressure vessels), Inspection, Pressure gradients, Specifications, Testing, Titanium.

For abstract, see NSA 31 12, number 35397.

TID/SNA-1250 PC$4.00/MF$2.25
Aerojet-General Corp., Sacramento, Calif.
Structural Development Test Plan, Nerva Aluminum Pressure Vessel S/N 0000003.
26 Sep 63, 14p

Descriptors: (*Nerva reactor, *Pressure vessels), Aluminium, Stress analysis, Testing.

For abstract, see NSA 31 12, number 35398.

TID/SNA-1251 PC$4.00/MF$2.25
Aerojet-General Corp., Sacramento, Calif.
Structural Development Program Nerva Thrust Structure. Revision B.
17 Apr 62, 19p

Descriptors: (*Nerva reactor, *Mechanical structures), Stress analysis, Testing.

For abstract, see NSA 31 12, number 35399.

TID/SNA-1252 PC$4.00/MF$2.25
Aerojet-General Corp., Sacramento, Calif.
Test Plan for Vendor Aluminum Pressure Vessel Acceptance Proof Tests.
R. W. Thomas. 25 Jul 63, 14p

Descriptors: (*Nerva reactor, *Pressure vessels), Inspection, Planning.

For abstract, see NSA 31 12, number 35400.

TID/SNA-1255 PC$5.00/MF$2.25
Aerojet-General Corp., Sacramento, Calif.
Heat Transfer Analyses on Kiwi-B Thrust Chamber. Part I.
J. N. Hester. 15 Nov 62, 38p

Descriptors: (*Kiwi-b1a reactor, *Heat transfer), Analog systems, Simulation, Temperature gradients.

For abstract, see NSA 31 12, number 35401.

TID/SNA-1256 PC$7.50/MF$2.25
Aerojet-General Corp., Azusa, Calif.
Nnrdc Engine Test Stand Exhaust System Hot-Flow Scale Test Program and Structural Design Studies and Test.
Jan 62, 86p

Descriptors: (*Nerva reactor, *Ducts), Design, Heat transfer, Test facilities.

For abstract, see NSA 31 12, number 35402.

TID/SNA-1258 PC$5.50/MF$2.25
Aerojet-General Corp., Sacramento, Calif.
Final Acceptance Test Plan for Nrx-A1 End Items. Revision 2.
K. E. Barr. 25 Nov 63, 48p

Descriptors: (*Nrx-a1 reactor, *Inspection).

For abstract, see NSA 31 12, number 35403.

TID/SNA-1260 PC$6.00/MF$2.25
Aerojet-General Corp., Sacramento, Calif.
Nerva Mark III Turbopump Performance Summary Handout.
F. X. Andrews, E. K. Bair, R. D. Cunningham, R. L. Goundrey, and D. E. Johnson. 25 Feb 64, 60p

Descriptors: (*Nerva reactor, *Pumps), Diagrams, Performance, Testing.

For abstract, see NSA 31 12, number 35404.

TID/SNA-1261 PC$4.00/MF$2.25
Aerojet-General Corp., Sacramento, Calif.
Structural Development Program Nerva Thrust Structure.
17 Apr 62, 19p

Descriptors: (*Nerva reactor, *Mechanical structures), Design, Stress analysis, Testing.

For abstract, see NSA 31 12, number 35405.

TID/SNA-1265 PC$6.00/MF$2.25
Aerojet-General Corp., Azusa, Calif.
Development of Nuclear Rocket Propulsion in the United States.
W. C. House. 9 Oct 63, 56p

Descriptors: (*Space propulsion reactors, *Planning), Comparative evaluations, Nerva reactor, Reviews, Usa.

For abstract, see NSA 31 12, number 35406.

TID/SNA-1292 PC$6.50/MF$2.25
Space-General Corp., El Monte, Calif.
Application of Nuclear Propulsion to a Lunar Logistics System for the Post-APOLLO Period. Period Covered, 28 February 1964--21 August 1964.
Aug 64, 69p

Descriptors: (*Nerva reactor, *Space flight), Moon, Planning.

For abstract, see NSA 31 12, number 35407.

TID/SNA-1295 PC$5.75/MF$2.25
Aeronca, Inc., Torrance, Calif. Aerocal Div.
Upper Thrust Structure, S/N 882013 Acceptance Test Report.
E. T. Swanson. 6 Nov 67, 52p

Descriptors: Deformation, Nerva reactor, Testing, Xe-prime reactor.

For abstract, see NSA 31 12, number 35408.

TID/SNA-1296 PC$6.25/MF$2.25
Aerojet-General Corp., Sacramento, Calif.
Engineering Methods: Practical Approach to Selecting Design Safety Factors Based on the Distribution of Stress and Strength. Volume I.
18 Sep 68, 65p

Descriptors: (*Nerva reactor, *Safety), Design, Mechanical properties, Reliability, Stresses.

For abstract, see NSA 31 12, number 35409.

TID/SNA-1297 PC$6.00/MF$2.25
Aerojet-General Corp., Sacramento, Calif.
Practical Approach to Selecting Design Safety Factors Based on the Distribution of Stress and Strength. Volume II.
18 Sep 68, 57p

Descriptors: (*Nerva reactor, Reactor materials), (*Reactor materials, *Stress analysis), Analytical solution, Design, Reliability, Safety, Statistics.

For abstract, see NSA 31 12, number 35410.

TID/SNA-1304 PC$15.25/MF$2.25
Aerojet-General Corp., Sacramento, Calif.; Westinghouse Electric Corp., Pittsburgh, Pa. Astronuclear Lab.
Safety Considerations Relative to Construction of E/Sts 2-3.
Nov 67, 243p

Descriptors: (*Nerva reactor, Test facilities), (*Test facilities, *Safety), Engineered safety systems, Fission product release, Meteorology, Reactor safety, Scrubbers.

For abstract, see NSA 31 12, number 35411.

TID/SNA-1308 PC$7.25/MF$2.25
General Dynamics/Fort Worth, Tex.

Irradiation Test, Preliminary Report.
J. W. Guinn, and C. G. Pou. 2 Nov 64, 84p

Descriptors: (*Nerva reactor, *Bearings), Astr reactor, Cryogenics, Irradiation, Pumps.

For abstract, see NSA 31 12, number 35412.

TID/SNA-1309 PC$6.25/MF$2.25
Aerojet-General Corp., Sacramento, Calif.
Nerva Program Requirements Document.
1969, 65p

Descriptors: (*Nerva reactor, *Specifications), Design.

For abstract, see NSA 31 12, number 35413.

TID/SNA-1310 PC$17.00/MF$2.25
Kaiser Engineers, Oakland, Calif.
Budgetary Study for Engine/Stage Test Stand (E/Sts) 2-3, Nuclear Rocket Development Station, Jackass Flats, Nevada. Evaluation of Wet Versus Dry Systems and Supporting Studies for Nerva Exhaust and Altitude Simulation System. Supplementary Project Report.
17 Jan 67, 316p

Descriptors: (*Nerva reactor, *Test facilities), Budgets, Ducts, Exhaust gases, Heat transfer, Performance, Scrubbers, Simulation.

For abstract, see NSA 31 12, number 35414.

TID/SNA-1311 PC$6.25/MF$2.25
Bazovsky (Igor) and Associates, Inc., Sherman Oaks, Calif.
Lecture Notes on Systems Maintainability.
Mar 70, 65p

Descriptors: Equipment, Maintenance, Nerva reactor, Planning, Reactor maintenance.

For abstract, see NSA 31 12, number 35415.

TID/SNA-1312 PC$4.00/MF$2.25
Aerojet-General Corp., Sacramento, Calif.
Structural Development Program. Nerva Thrust Structure. 11 January 1962--30 April 1963. Revision a.
R. W. Thomas. 31 Dec 62, 13p

Descriptors: (*Nerva reactor, *Mechanical structures), Stress analysis, Testing.

For abstract, see NSA 31 12, number 35416.

TID/SNA-1317 PC$4.50/MF$2.25
Aerojet-General Corp., Sacramento, Calif.
Environmental Evaluation Testing of Nerva Nrxa-2HF Instrumentation. Supplement 1.
2 Mar 64, 27p

Descriptors: (*Nrx-a2 reactor, *Transducers), Nerva reactor, Performance testing.

For abstract, see NSA 31 12, number 35417.

TID/SNA-1322 PC$14.50/MF$2.25
NERVA Test Operations, Jackass Flats, Nev.
Handbook Health and Safety Data and Procedures. Volume I.
31 Dec 63, 229p

Descriptors: (*Nerva reactor, *Safety), Criticality, Cryogenics, Health hazards, Management, Manuals, Radiation protection.

For abstract, see NSA 31 12, number 35418.

TID/SNA-1323 PC$9.75/MF$2.25
NERVA Test Operations, Jackass Flats, Nev.
Health and Safety Instructions.
15 Sep 63, 134p

Descriptors: (*Nerva reactor, *Safety), Beryllium, Cryogenics, Hydrogen, Manuals, Test facilities.

For abstract, see NSA 31 12, number 35419.

TID/SNA-1337 PC$4.00/MF$2.25
Aerojet-General Corp., Sacramento, Calif.
Nerva Technical Administration Documents. Work Statements. Addendums 7, 8, 10, 11, and 15.
16 Dec 63, 18p

Descriptors: (*Nerva reactor, *Pumps), Inspection, Specifications.

For abstract, see NSA 31 12, number 35420.

TID/SNA-1340 PC$6.00/MF$2.25
Aerojet-General Corp., Sacramento, Calif.
Mechanical Irradiation Test 3/L003 Turbopump Bearing Set. Final Test Report.
F. E. Young. 23 Apr 64, 59p

Descriptors: (*Nerva reactor, Bearings), (*Bearings, *Physical radiation effects), Astr reactor, Cryogenics, Pumps.

For abstract, see NSA 31 12, number 35421.

TID/SNA-1341 PC$7.00/MF$2.25
Aerojet-General Corp., Sacramento, Calif.
Mechanical Irradiation Test 3/L001 Turbopump Bearing Set. Volume I. Final Test Report.
W. E. Durkee. Feb 64, 80p

Descriptors: (*Nerva reactor, Bearings), (*Bearings, *Physical radiation effects), Astr reactor, Cryogenics, Pumps, Radiation heating.

For abstract, see NSA 31 12, number 35422.

TID/SNA-1342 PC$5.00/MF$2.25
Aerojet-General Corp., Sacramento, Calif.
Mechanical Irradiation Test No. 8/L001 Static Flange Seal Assembly. Volume IV. Final Test Report.
M. H. Warner. 16 Mar 64, 40p

Descriptors: (*Nerva reactor, Seals), (*Seals, *Physical radiation effects), Astr reactor, Leaks.

For abstract, see NSA 31 12, number 35423.

TID/SNA-1343 PC$5.25/MF$2.25
Aerojet-General Corp., Sacramento, Calif.
Mechanical Irradiation Test No. 1/L001 Tank Shut-off Valve, Configuration No. 1. Volume II. Final Test Report.
M. H. Warner. Feb 64, 45p

Descriptors: (*Nerva reactor, Valves), (*Valves, *Physical radiation effects), Astr reactor, Cryogenics, Seals.

For abstract, see NSA 31 12, number 35424.

TID/SNA-1345 PC$5.25/MF$2.25
Aerojet-General Corp., Sacramento, Calif.
Mechanical Irradiation Test No. 4/L001 Turbine Power Control Valve Configuration No. 1. Volume III. Final Test Report.
M. H. Warner. Feb 64, 44p

Descriptors: (*Nerva reactor, Valves), (*Valves, *Physical radiation effects), Astr reactor, Seals.

For abstract, see NSA 31 12, number 35425.

TID/SNA-1347 PC$13.50/MF$2.25
Aerojet-General Corp., Sacramento, Calif.

Hydrostatic Proof Test of the Nrx-a Aluminum Pressure Vessel, S/N 0000002.
L. M. Smith. 1 Aug 63, 207p

Descriptors: (*Nrx-a1 reactor, *Pressure vessels), Aluminium, Testing.

For abstract, see NSA 31 12, number 35426.

TID/SNA-1368 PC$6.50/MF$2.25
Aerojet-General Corp., Azusa, Calif.
Preliminary Computing Manual: Sc-4020 Subprograms.
Nov 63, 67p

Descriptors: (*Nerva reactor, *Data processing), Cathode ray tubes, Computer calculations, Diagrams, Digital computers, Display devices, Manuals.

For abstract, see NSA 31 12, number 35427.

TID/SNA-1373 PC$5.75/MF$2.25
General Dynamics/Fort Worth, Tex.
Irradiation Test, Gtr-12. Preliminary Report.
17 Apr 64, 54p

Descriptors: (*Nerva reactor, Accelerometers), (*Actuators, *Physical radiation effects), (*Accelerometers, Physical radiation effects), (*Transducers, Physical radiation effects), Gtr reactor.

For abstract, see NSA 31 12, number 35428.

TID/SNA-1386 PC$10.75/MF$2.25
Aerojet-General Corp., Sacramento, Calif.
75K Nerva Engine Meeting.
13 Aug 68, 151p

Descriptors: (*Nerva reactor, *Planning), Design, Management, Research programs.

For abstract, see NSA 31 12, number 35429.

TID/SNA-1388 PC$10.25/MF$2.25
Aerojet-General Corp., Sacramento, Calif.
Snp-1SA3 Contract Monthly Letter Report for the Period 27 March 1963--26 April 1963.
J. J. Peterson. 4 May 63, 142p

Descriptors: (*Nrx-a1 reactor, *Management), (*Kiwi-b1a reactor, Management), Nozzles, Pressure vessels.

For abstract, see NSA 31 12, number 35430.

TID/SNA-1394 PC$9.00/MF$2.25
Aerojet-General Corp., Sacramento, Calif.
Nerva Technical Discussions by Subtask, CY 1964.
1964, 119p

Descriptors: (*Nerva reactor, *Research programs).

For abstract, see NSA 31 12, number 35431.

TID/SNA-1398 PC$13.25/MF$2.25
General Dynamics/Fort Worth, Tex.
Astr-1 Irradiation Test, Preliminary Report.
R. D. Crabtree, and F. H. Johnson. 17 Jul 63, 202p

Descriptors: (*Nerva reactor, *Reactor components), Low temperature, Physical radiation effects, Testing.

For abstract, see NSA 31 12, number 35432.

TID/SNA-1399 PC$10.00/MF$2.25
General Dynamics/Fort Worth, Tex.
Astr-2 Irradiation Test, Preliminary Report.
W. M. Laney, and J. D. Stanley. 16 Oct 63, 138p

Descriptors: (*Nerva reactor, *Bearings), Low temperature, Physical radiation effects, Pumps, Testing.

For abstract, see NSA 31 12, number 35433.

TID/SNA-1452 PC$6.50/MF$2.25
Aerojet-General Corp., Sacramento, Calif.
Instrumentation for Cryogenic Temperature Measurements of the Nerva Turbopump Assembly Bearings During Non-Nuclear Static Testing.
J. W. Farnham, and H. C. Chandon. 19 Nov 63, 69p

Descriptors: (*Nerva reactor, Bearings), (*Bearings, *Testing), Cryogenics, Pumps, Temperature measurement, Thermocouples.

For abstract, see NSA 31 12, number 35434.

TID/SNA-1460 PC$7.75/MF$2.25
Aerojet-General Corp., Sacramento, Calif.
Reliability and Quality Assurance Nerva Program. Volume I. Reliability Program Plan.
Feb 63, 91p

Descriptors: (*Nerva reactor, *Reliability), Planning.

For abstract, see NSA 31 12, number 35435.

TID/SNA-1462 PC$4.75/MF$2.25
Aerojet-General Corp., Sacramento, Calif.
Nerva Quality Control and Reliability Status Report for the Period 21 December 1963--20 March 1964.
5 Apr 64, 33p

Descriptors: (*Nerva reactor, *Quality control), Fault tree analysis, Nozzles, Reliability.

For abstract, see NSA 31 12, number 35436.

TID/SNA-1477 PC$16.75/MF$2.25
Aerojet-General Corp., Sacramento, Calif.
Snp-1SA3 Contract Monthly Letter Report for the Period 27 September 1963--26 October 1963.
J. J. Peterson. 4 Nov 63, 271p

Descriptors: (*Nerva reactor, *Design), Fabrication, Radiation effects.

For abstract, see NSA 31 12, number 35437.

TID/SNA-1507 PC$9.00/MF$2.25
Aerojet-General Corp., Sacramento, Calif.
Nerva Technical Discussions by Subtask, CY 1964, Enclosure (3).
119p

Descriptors: (*Nerva reactor, *Research programs), Reviews.

For abstract, see NSA 31 12, number 35438.

TID/SNA-1508 PC$6.00/MF$2.25
Aerojet-General Corp., Sacramento, Calif.
Mechanical Irradiation Test 3/L002, Turbopump Bearing Set.
F. E. Young. 20 Mar 64, 57p

Descriptors: (*Nerva reactor, *Bearings), Low temperature, Physical radiation effects, Pumps, Testing.

For abstract, see NSA 31 12, number 35439.

TID/SNA-1516 PC$4.00/MF$2.25
Aerojet-General Corp., Sacramento, Calif.
Snpo Review of the Reon Safety Program for Contract Year 1964.
19 Jan 65, 16p

Descriptors: (*Nerva reactor, *Test facilities), Safety.

For abstract, see NSA 31 12, number 35440.

TID/SNA-1526 PC$11.75/MF$2.25
NERVA Test Operations, Jackass Flats, Nev.
Nrx/Est Dragon Memoranda, EP-Ia 4. Est 051--Est 072.
172p

Descriptors: (*Nrx-a4-est reactor, *Performance testing), Pumps, Test facilities, Valves.

For abstract, see NSA 31 12, number 35441.

TID/SNA-1527 PC$16.00/MF$2.25
NERVA Test Operations, Jackass Flats, Nev.
Dragon Memoranda, Est 128--159, Nrx/Est EP-III.
257p

Descriptors: (*Nrx-a4-est reactor, *Performance testing), Pumps, Reactor start-up.

For abstract, see NSA 31 12, number 35442.

TID/SNA-1529 PC$5.00/MF$2.25
Aerojet-General Corp., Azusa, Calif.
Nuclear Rocket Systems for Rapid Maneuvers of Military Space Systems. Report No. Ag-10.
J. Grey. 30 Apr 62, 38p

Descriptors: Comparative evaluations, Fast reactors, Planning, Space propulsion reactors, Space vehicles.

For abstract, see NSA 31 12, number 35443.

TID/SNA-1550 PC$6.50/MF$2.25
Evaluation of Exhaust-System Concepts for Nerva-II Stage Ground Tests.
J. Grey. 1 Jun 65, 70p

Descriptors: (*Nerva reactor, Exhaust gases), (*Exhaust gases, *Waste disposal), Hydrogen, Testing.

For abstract, see NSA 31 12, number 35444.

TID/SNA-1551 PC$13.50/MF$2.25
NERVA Test Operations, Jackass Flats, Nev.
Nrx/Est Performance Evaluation Dragon Memoranda, EP IV.
Mar 66, 208p

Descriptors: (*Nrx-a4-est reactor, *Performance testing), Reactor start-up, Transfer functions.

For abstract, see NSA 31 12, number 35445.

TID/SNA-1557 PC$4.00/MF$2.25
Aerojet-General Corp., Azusa, Calif.
Outline of Factors Significant to the Development of Nuclear Rocket Engines Utilizing Fast Reactors. Report No. Ag-11.
J. Grey. 8 Dec 62, 14p

Descriptors: Design, Fast reactors, Performance, Planning, Space propulsion reactors, Weight.

For abstract, see NSA 31 12, number 35446.

TID/SNA-1563 PC$5.75/MF$2.25
Aerojet-General Corp., Sacramento, Calif.
Nerva Engine Assembly Procedures.
7 Dec 62, 53p

Descriptors: (*Nerva reactor, *Fabrication), Transport.

For abstract, see NSA 31 12, number 35447.

TID/SNA-1588 PC$8.75/MF$2.25
Aerojet-General Corp., Sacramento, Calif.
Snp-1SA3 Contract Monthly Letter Report for the Period 27 November 1963--26 December 1963.
J. J. Peterson. Dec 63, 113p

Descriptors: (*Nerva reactor, *Research programs), Design, Reviews.

For abstract, see NSA 31 12, number 35448.

TID/SNA-1601 PC$4.00/MF$2.25
Aerojet-General Corp., Sacramento, Calif.
Program Plan: Nrx-a Nozzles with Area Ratio 4. Subtask 1.4.
J. J. Peterson. 10 Jul 63, 14p

Descriptors: (*Nerva reactor, *Nozzles), Design, Fabrication.

For abstract, see NSA 31 12, number 35449.

TID/SNA-1605 PC$7.75/MF$2.25
Aerojet-General Corp., Sacramento, Calif.
Snp-1SA3 Contract, Monthly Letter Report.
Jan 64, 92p

Descriptors: (*Nerva reactor, *Research programs), Reviews.

For abstract, see NSA 31 12, number 35450.

TID/SNA-1616 PC$4.75/MF$2.25
Aerojet-General Corp., Sacramento, Calif.
Dragon-3 Daily Summary Memo No. 5.
A. A. Wasserman. 13 May 65, 31p

Descriptors: (*Nrx-a3 reactor, *Testing), Flow rate, Fluid flow, Pressure dependence.

For abstract, see NSA 31 12, number 35451.

TID/SNA-1617 PC$4.00/MF$2.25
Aerojet-General Corp., Sacramento, Calif.
Integrity of Nrx-A3 Test Assembly Based on EP-IIIa Flow and Pressure Data.
L. Boman, and J. R. Lance. 15 May 65, 4p

Descriptors: (*Nrx-a3 reactor, *Testing), Flow rate, Nozzles, Pressure dependence.

For abstract, see NSA 31 12, number 35452.

TID/SNA-1619 PC$4.00/MF$2.25
Aerojet-General Corp., Sacramento, Calif.
Dragon-3 Daily Summary Twx No. 7.
A. A. Wasserman. 15 May 65, 2p

Descriptors: (*Nrx-a3 reactor, *Testing), Data.

For abstract, see NSA 31 12, number 35453.

TID/SNA-1642 PC$6.75/MF$2.25
AMF Atomics, Greenwich, Conn.
Nerva Remote Handling System, Summary Technical Report for the Period October 1, 1962--September 30, 1963.
15 Nov 63, 71p

Descriptors: (*Nerva reactor, *Remote handling equipment), Test facilities.

For abstract, see NSA 31 12, number 35454.

TID/SNA-1644 PC$13.50/MF$2.25
Aerojet-General Corp., Sacramento, Calif.
Dragon Memoranda, Est 160--187. Nrx/Est, EP-IV.
210p

Descriptors: (*Nrx-a4-est reactor, *Testing), Data, Performance.

For abstract, see NSA 31 12, number 35455.

TID/SNA-1651 PC$8.00/MF$2.25
Aerojet-General Corp., Sacramento, Calif.
Bendix Corporation Research Laboratories Division Support Documentation for Nerva Program. Period 11 January 1962--30 June 1962 and Period 1 July 1962--30 September 1962.
1962, 98p

Descriptors: (*Nerva reactor, *Research programs), Cost, Management, Planning.

For abstract, see NSA 31 12, number 35456.

TID/SNA-1675 PC$6.75/MF$2.25
General Dynamics/Fort Worth, Tex.
Irradiation Test, Preliminary Report.
C. G. Pou, and J. W. Guinn. 24 Oct 63, 73p

Descriptors: (*Nerva reactor, *Bearings), Physical radiation effects, Pumps, Testing.

For abstract, see NSA 31 12, number 35457.

TID/SNA-1676 PC$6.75/MF$2.25
General Dynamics/Fort Worth, Tex.
Irradiation Test, Preliminary Report.
J. W. Guinn, C. G. Pou, and J. S. Wachowski. 18 Dec 64, 75p

Descriptors: (*Nerva reactor, *Bearings), Physical radiation effects, Pumps, Testing.

For abstract, see NSA 31 12, number 35458.

TID/SNA-344 PC$26.00/MF$2.25
NERVA Test Operations, Jackass Flats, Nev.
Xe Prime Test Review Board (Trb) (Phase II). Changes to Documentation and Minutes of Meetings.
1969, 460p

Descriptors: (*Xe-prime reactor, *Testing).

For abstract, see NSA 31 12, number 35317.

TID/SNA-346 PC$13.75/MF$2.25
Aerojet Nuclear Systems Co., Sacramento, Calif.
Tbd Values for Engine Specification, No. C002-Cp-090290A-F1, 8 September 1970.
22 Jan 71, 214p

Descriptors: (*Nerva reactor, *Specifications), Design, Tables.

For abstract, see NSA 31 12, number 35318.

TID/SNA-389 PC$16.25/MF$2.25
Aerojet Nuclear Systems Co., Sacramento, Calif.
Nerva Management Plan. Volume II. Logic Diagrams.
Dec 70, 263p

Descriptors: (*Nerva reactor, *Diagrams), Management.

For abstract, see NSA 31 12, number 35319.

TID/SNA-392 PC$10.75/MF$2.25
Radiation Research Associates, Inc., Fort Worth, Tex.
Users Manual for Cohort, a Monte Carlo Program for Calculation of Radiation Heating and Transport on the IBM-360.
J. K. Warkentin, J. H. Price, and M. B. Wells. 1 Oct 70, 152p

Descriptors: (*Nerva reactor, Computer codes), (*Computer codes, *C codes), Manuals, Monte carlo method, Neutron transport, Radiation heating.

For abstract, see NSA 31 12, number 35320.

TID/SNA-405 PC$25.00/MF$2.25
NERVA Test Operations, Jackass Flats, Nev.
Test Specification and Procedure Review Board: Changes to Documentation and Minutes of Meetings.
8 Nov 68, 437p

Descriptors: (*Xe-prime reactor, *Management), Documentation, Nerva reactor, Specifications, Testing.

For abstract, see NSA 31 12, number 35321.

TID/SNA-418 PC$4.25/MF$2.25
Aerojet-General Corp., Sacramento, Calif. Nuclear Div.
Nerva Schematic Block Diagrams, S055-SS090205-F1.
Sep 69, 23p

Descriptors: (*Nerva reactor, *Diagrams), Design, Interfaces.

For abstract, see NSA 31 12, number 35322.

TID/SNA-419 PC$7.00/MF$2.25
Aerojet-General Corp., Sacramento, Calif. Nuclear Div.
Nerva Time Line Sheets, S056-SS090205-F1.
Sep 69, 78p

Descriptors: (*Nerva reactor, *Planning), Reactor operation.

For abstract, see NSA 31 12, number 35323.

TID/SNA-427 PC$10.25/MF$2.25
Aerojet Nuclear Systems Co., Sacramento, Calif.
Contract Work Statement. Supplement XXIV to Appendix B Dated February 1, 1968.
143p
Contract SNP-1

Descriptors: (*Nerva reactor, *Management), Research programs.

For abstract, see NSA 31 12, number 35324.

TID/SNA-431 PC$9.50/MF$2.25
Aerojet Nuclear Systems Co., Sacramento, Calif.
Nerva Engine Natural Environment, S023-Cp-090290-F1.
Apr 70, 128p

Descriptors: (*Nerva reactor, *Specifications), Design.

For abstract, see NSA 31 12, number 35325.

TID/SNA-434 PC$19.25/MF$2.25
Aerojet Nuclear Systems Co., Sacramento, Calif.
Nerva Reference Data (Full Flow Engine), S130-Cp-090290-F1-Prel.
Apr 70, 325p

Descriptors: (*Nerva reactor, *Design), Data, Performance, Planning, Space flight, Tables.

For abstract, see NSA 31 12, number 35326.

TID/SNA-439 PC$10.00/MF$2.25
Aerojet Nuclear Systems Co., Sacramento, Calif.
Nerva Detail Specification. Part I. Performance/Design and Qualification Requirements for Engine, Nerva, 75K, Full Flow.
136p

Descriptors: (*Nerva reactor, *Specifications), Design.

For abstract, see NSA 31 12, number 35327.

TID/SNA-440 PC$5.00/MF$2.25
Aerojet Nuclear Systems Co., Sacramento, Calif.
Nerva Detail Specification. Part I. Performance/Design and Qualification Requirements for Engine, Nerva, 75K, Full Flow.
Aug 71, 37p

Descriptors: (*Nerva reactor, *Specifications), Design.

For abstract, see NSA 31 12, number 35328.

TID/SNA-443 PC$5.75/MF$2.25
Aerojet Nuclear Systems Co., Sacramento, Calif.
Preliminary: Measurement Requirements List for the Nerva Operational Flight Engine (1137400E), C101-Cp090290a-F1.
Oct 71, 53p

Descriptors: (*Nerva reactor, *Specifications).

For abstract, see NSA 31 12, number 35329.

TID/SNA-444 PC$4.00/MF$2.25
Aerojet Nuclear Systems Co., Sacramento, Calif.
Radiation Effects Test Program Plan: Instrumentation, Components, and Electronics.
Jan 72, 18p

Descriptors: (*Nerva reactor, *Planning), Accelerometers, Bearings, Electronic equipment, Gtr reactor, Radiation effects, Reactor components, Reactor instrumentation, Strain gages.

For abstract, see NSA 31 12, number 35330.

TID/SNA-494 PC$20.25/MF$2.25
Aerojet-General Corp., Sacramento, Calif.
Reliability Allocations, Assessments, and Analysis Report. Volume I. Reliability Model, Predictions and Allocations. Volume II. System Failure-Mode Effects and Criticality Analysis. Volume III. Trend Data.
D. S. Duncan, W. M. Bryan, G. M. Witcraft, and D. Syrek. Sep 71, 345p

Descriptors: (*Nerva reactor, *Reliability), (*Wear, *Monitoring), Fault tree analysis.

For abstract, see NSA 31 12, number 35331.

TID/SNA-497 PC$15.00/MF$2.25
Aerojet Nuclear Systems Co., Sacramento, Calif.
Systems Analysis Summary Report. Volume I. Sections 7--9.
Aug 71, 240p

Descriptors: (*Nerva reactor, *Mathematical models), Performance, Reactor operation, Sensitivity.

For abstract, see NSA 31 12, number 35332.

TID/SNA-500 PC$26.75/MF$2.25
Aerojet Nuclear Systems Co., Sacramento, Calif.
Systems Analysis Summary Report. Volume III. Flight Engine Profiles.
D. Buden, R. J. Gulde, and L. M. Smalec. Aug 71, 471p

Descriptors: (*Nerva reactor, *Reactor operation), Data, Reactor shutdown, Space flight, Tables.

For abstract, see NSA 31 12, number 35333.

TID/SNA-506 PC$20.50/MF$2.25
Aerojet Nuclear Systems Co., Sacramento, Calif.
Flight Safety Contingency Analysis Report. Volume II. Nonnuclear Susbsystems Contingency Analysis.
A. J. Kennedy. Sep 71, 347p

Descriptors: (*Nerva reactor, *Failures), Fault tree analysis, Safety, Space flight.

For abstract, see NSA 31 12, number 35334.

TID/SNA-611 PC$12.50/MF$2.25
Aerojet Nuclear Systems Co., Sacramento, Calif.
Nerva Safety Plan.
Sep 70, 187p

Descriptors: (*Nerva reactor, *Safety), Planning, Reactor safety, Specifications.

For abstract, see NSA 31 12, number 35335.

TID/SNA-658 PC$4.00/MF$2.25
Aerojet-General Corp., Sacramento, Calif. Nuclear Div.
Performance/Design and Qualification Requirements for Structural Support Block Valve and Actuator.
15 Dec 69, 13p

Descriptors: (*Nerva reactor, *Valves), Actuators, Control equipment, Design, Performance, Testing.

For abstract, see NSA 31 12, number 35336.

TID/SNA-659 PC$4.00/MF$2.25
Aerojet-General Corp., Sacramento, Calif. Nuclear Div.
Performance/Design and Qualification Requirements for Turbine Discharge Check Valve.
15 Dec 69, 12p

Descriptors: (*Nerva reactor, *Valves), Design, Performance, Testing, Turbines.

For abstract, see NSA 31 12, number 35337.

TID/SNA-697 PC$10.50/MF$2.25
Aerojet-General Corp., Sacramento, Calif. Nuclear Div.
Engine System Tolerances.
Oct 69, 148p

Descriptors: (*Nerva reactor, *Specifications).

For abstract, see NSA 31 12, number 35338.

TID/SNA-698 PC$45.25/MF$2.25
Aerojet Nuclear Systems Co., Sacramento, Calif.
Controls and Simulation Computer Study to Support Engine and Reactor Testing. For Inclusion as an Input to the Automatic Data Processing Long Range Plan.
R. L. Kenyon. 23 Dec 70, 845p

Descriptors: (*Nerva reactor, *Planning), Digital computers, Mathematical models, Performance testing, Reactor control systems, Simulation.

For abstract, see NSA 31 12, number 35339.

TID/SNA-733 PC$6.25/MF$2.25
Aerojet Nuclear Systems Co., Sacramento, Calif.
Nerva Detail Specification. Part I. Performance/Design and Qualification Requirements for Turbine Block Valve.
64p

Descriptors: (*Nerva reactor, *Valves), Design, Specifications, Turbines.

For abstract, see NSA 31 12, number 35340.

TID/SNA-806 PC$13.50/MF$2.25
Aerojet-General Corp., Sacramento, Calif. Nuclear Div.
Nerva Requirements Allocation Sheets. Book 1 of 2.
Sep 69, 208p

Descriptors: (*Nerva reactor, *Planning), Specifications.

For abstract, see NSA 31 12, number 35341.

TID/SNA-809 PC$6.50/MF$2.25
Aerojet-General Corp., Sacramento, Calif.
Nerva Product Assurance Program Plan.
30 Sep 69, 70p

Descriptors: (*Nerva reactor, *Quality assurance), Planning.

For abstract, see NSA 31 12, number 35342.

TID/SNA-814 PC$9.75/MF$2.25
Aerojet Nuclear Systems Co., Sacramento, Calif.
Nerva Detail Specification. Part I. Performance/Design and Qualification Requirements for Engine, Nerva, 75K, Full Flow.
1971, 133p

Descriptors: (*Nerva reactor, *Specifications), Design.

For abstract, see NSA 31 12, number 35343.

TID/SNA-822 PC$6.50/MF$2.25
Aerojet Nuclear Systems Co., Sacramento, Calif.
Nerva Test Support Equipment and Aerospace Ground Equipment Plan.
Jun 70, 70p

Descriptors: (*Nerva reactor, *Test facilities), Equipment, Specifications, Testing.

For abstract, see NSA 31 12, number 35344.

TID/SNA-825 PC$5.75/MF$2.25
Aerojet-General Corp., Sacramento, Calif. Nuclear Div.
Nerva Checkout Age Preliminary Design Plan.
Feb 70, 54p

Descriptors: (*Nerva reactor, *Inspection), Design, Planning, Testing.

For abstract, see NSA 31 12, number 35345.

TID/SNA-841 PC$19.75/MF$2.25
Aerojet-General Corp., Sacramento, Calif. Nuclear Div.
Trade Study Report. Preliminary.
Sep 68, 332p

Descriptors: (*Nerva reactor, *Reactor operation), Design, Moment of inertia, Nozzles, Propellants, Pumps, Reactor shutdown, Reactor start-up, Weight.

For abstract, see NSA 31 12, number 35346.

TID/SNA-896 PC$25.75/MF$2.25
Aerojet Nuclear Systems Co., Sacramento, Calif.
Memoranda and Supporting Documentation for Nerva Development.
E. A. Warman. 26 Oct 70, 455p

Descriptors: (*Nerva reactor, *Radiation heating), Computer calculations, Monte carlo method, Neutron transport, Radiation doses, Scattering, Shielding.

For abstract, see NSA 31 12, number 35347.

TID/SNA-898 PC$7.00/MF$2.25
Aerojet Nuclear Systems Co., Sacramento, Calif.
Preliminary System Safety Analysis Report for Nerva Engine Test System (Chapters 1--5), S010-SAR002-W241A7. Draft.
Sep 70, 77p

Descriptors: (*Nerva reactor, *Performance testing), Planning, Safety.

For abstract, see NSA 31 12, number 35348.

TID/SNA-899 PC$5.25/MF$2.25
Aerojet-General Corp., Sacramento, Calif. Nuclear Div.
Nerva Logistics Support Plan, L003-SS-09205-F1.
30 Sep 69, 43p

Descriptors: (*Nerva reactor, *Planning), Management.

For abstract, see NSA 31 12, number 35349.

TID/SNA-900 PC$6.50/MF$2.25
Aerojet-General Corp., Sacramento, Calif. Nuclear Div.
Nerva Product Assurance Program Plan, P017-SS-090205-F1.
30 Sep 69, 70p

Descriptors: (*Nerva reactor, *Quality assurance), Management, Planning.

For abstract, see NSA 31 12, number 35350.

TID/SNA-912 PC$28.00/MF$2.25
Aerojet-General Corp., Sacramento, Calif.
Project Report: Specification Requirement Allocation Sheets (Sras).
16 Mar 71, 496p

Descriptors: (*Nerva reactor, *Specifications), Actuators, Nozzles, Pressure vessels, Valves.

For abstract, see NSA 31 12, number 35351.

TID/SNA-981 PC$4.00/MF$2.25
Aerojet Nuclear Systems Co., Sacramento, Calif.
Engineering Operations Report: Shielding Requirements for Rns Nuclear Propulsion Module.
E. A. Warman. 14 Jul 71, 15p

Descriptors: (*Nerva reactor, *Radiation doses), Computer calculations, Shielding.

For abstract, see NSA 31 12, number 35352.

TID/SNA-983 PC$4.25/MF$2.25
Aerojet Nuclear Systems Co., Sacramento, Calif.
Engineering Operations Meeting Report: Engine Design and Analysis Department.
J. R. DaVolio, and K. E. Unmack. 8 Oct 71, 21p

Descriptors: (*Nerva reactor, *Design).

For abstract, see NSA 31 12, number 35353.

TID/SNA-985 PC$4.75/MF$2.25
Aerojet Nuclear Systems Co., Sacramento, Calif.
Engineering Operations Report: I and C System Component Description and Interface Definition.
L. K. Porter. 15 Jul 71, 35p

Descriptors: (*Nerva reactor, Reactor instrumentation), (*Reactor instrumentation, *Interfaces).

For abstract, see NSA 31 12, number 35354.

TID/SNA-986 PC$4.00/MF$2.25
Aerojet Nuclear Systems Co., Sacramento, Calif.
I and C System Electrical Interface Network Design Study.
R. D. Huffman. 9 Nov 71, 13p

Descriptors: (*Nerva reactor, Reactor instrumentation), (*Reactor instrumentation, *Interfaces), Actuators, Design.

For abstract, see NSA 31 12, number 35355.

TID/SNA-988 PC$4.00/MF$2.25
Aerojet Nuclear Systems Co., Sacramento, Calif.
Engineering Operations Trip Report.
E. A. Warman. 11 Jun 71, 3p

Descriptors: (*Nerva reactor, *Radiation doses), Computer calculations, Mathematical models, Monte carlo method, Scattering, Shielding.

For abstract, see NSA 31 12, number 35356.

TID/SNM-4 PC$4.00/MF$2.25
Aerojet-General Corp., Sacramento, Calif.
Nuclear Rocket Uncooled Nozzle Study Program. Monthly Report, 1 March--31 March 1970.
Apr 70, 12p

Descriptors: (*Nerva reactor, *Nozzles), Cooling, Design, Graphite, Thermal stresses.

For abstract, see NSA 31 12, number 35459.

TID/SNM-5 PC$5.00/MF$2.25
Aerojet-General Corp., Azusa, Calif.
Report on the Nerva Systems Analysis Program under Subtask 1.1.6.
10 Jul 63, 36p

Descriptors: (*Nerva reactor, *Management), Design.

For abstract, see NSA 31 12, number 35316.

TID/SNW-19 PC$6.25/MF$2.25
Westinghouse Electric Corp., Pittsburgh, Pa. Astronuclear Lab.
Nuclear Subsystem Subpower Range Start-Up Requirements.
64p

Descriptors: (*Nerva reactor, *Reactor start-up), Diagrams, Reactor control systems, Reactor shutdown.

For abstract, see NSA 31 12, number 35461.

TID/SNW-5 PC$6.00/MF$2.25
Westinghouse Electric Corp., Pittsburgh, Pa. Astronuclear Lab.
Wanl Xe-1 Controls Readiness Review, March 7 and 8, 1968.
57p

Descriptors: (*Xe-prime reactor, *Reactor control systems), Reactor instrumentation, Reviews, Test facilities.

For abstract, see NSA 31 12, number 35460.

USNRDL-TR-1010 PC$12.00/MF$2.25
Naval Radiological Defense Lab., San Francisco, Calif.
Rover Flight Safety Program Preliminary Review. Iv. Safety Analysis Report: Radiological Considerations in Nuclear Flight Safety.
20 Apr 66, 178p

Descriptors: (*Rover reactors, *Reactor accidents), (*Skin, *Radiation doses), (*Lungs, Radiation doses), (*Gastrointestinal tract, Radiation doses), Biological radiation effects, Internal irradiation, Space flight.

For abstract, see NSA 31 12, number 35462.

WANL-TME-1123 PC$5.75/MF$2.25
Westinghouse Electric Corp., Pittsburgh, Pa. Astronuclear Lab.
Analysis and Design of Nrx-A3 Limiter Circuits.
J. Josephson, and P. Gurski. 12 Mar 65, 53p

Descriptors: (*Nrx-a3 reactor, *Limiters), Analog systems, Design, Electronic circuits.

For abstract, see NSA 31 12, number 35466.

WANL-TME-1126(Add.1)(Suppl.2)(Rev.2) PC$4.00/MF$2.25
Westinghouse Electric Corp., Pittsburgh, Pa. Astronuclear Lab.
Wanl-Tme--1126: Supplement 2. Revision 2. Addendum 1.
E. H. Hemmerle. 28 Dec 65, 3p

Descriptors: (*Nrx-a4-est reactor, *Reactivity), Failures, Pumps.

For abstract, see NSA 31 12, number 35467.

WANL-TME-1126(Suppl.3)(Add.2) PC$4.00/MF$2.25
Westinghouse Electric Corp., Pittsburgh, Pa. Astronuclear Lab.
Reduction of Period Scram Setting for EP-IIc from 0.3 Sec to 1.0 Sec.
E. H. Hemmerle. 3 Feb 66, 3p

Descriptors: (*Nrx-a4-est reactor, *Scram), Specifications, Testing.

For abstract, see NSA 31 12, number 35468.

WANL-TME-1153 PC$5.25/MF$2.25
Westinghouse Electric Corp., Pittsburgh, Pa. Astronuclear Lab.
Effectiveness of Vertical Shields in a Cluster of Three Nerva II Modules.
L. O. Ricks. Apr 65, 45p

Descriptors: (*Nerva reactor, *Shielding), Configuration, Optimization, Weight.

For abstract, see NSA 31 12, number 35469.

WANL-TME-1163 PC$4.00/MF$2.25
Westinghouse Electric Corp., Pittsburgh, Pa. Astronuclear Lab.
Orbit Start Applications of Nerva and Advanced Nerva Engines.
P. W. Jr. Dickson. May 65, 20p

Descriptors: (*Nerva reactor, *Space flight), Computer calculations, Performance.

For abstract, see NSA 31 12, number 35470.

WANL-TME-1194 PC$4.50/MF$2.25
Westinghouse Electric Corp., Pittsburgh, Pa. Astronuclear Lab.
Development of Pressure Transducers for Internal Mounting and Pressure Transducer Requirements for Control (Presented at the Nerva Instrumentation Review Meeting at Wanl on June 9 and 10, 1965).
F. S. Malick, and L. C. Mackey. 14 Jun 65, 27p

Descriptors: (*Nerva reactor, *Transducers), Pressure measurement.

For abstract, see NSA 31 12, number 35471.

WANL-TME-1505 PC$5.75/MF$2.25
Westinghouse Electric Corp., Pittsburgh, Pa. Astronuclear Lab.
Agc/Wanl Operation Manual. Section III. Technical Interfaces.
8 Sep 66, 54p

Descriptors: (*Nerva reactor, *Management), Interfaces, Manuals.

For abstract, see NSA 31 12, number 35472.

WANL-TME-1526 PC$7.25/MF$2.25
Westinghouse Electric Corp., Pittsburgh, Pa. Astronuclear Lab.
Vari-Quir III: Inclusion of the R-theta Geometry.
G. Collier, J. W. Riese, and W. H. Gray. Oct 66, 85p

Descriptors: (*Nerva reactor, *Reactor kinetics), (*Computer codes, *V codes).

For abstract, see NSA 31 12, number 35473.

WANL-TME-1578 PC$4.00/MF$2.25
Westinghouse Electric Corp., Pittsburgh, Pa. Astronuclear Lab.
Design Criteria for Xe-1 Engine Mounted Nuclear Detector (Emnd).
R. A. Schatz. 2 Mar 67, 18p

Descriptors: (*Xe-prime reactor, *Neutron detectors), Design, Specifications.

For abstract, see NSA 31 12, number 35474.

WANL-TME-1689 PC$4.50/MF$2.25
Westinghouse Electric Corp., Pittsburgh, Pa. Astronuclear Lab.
Computer Program for Calculating the Boundary Layer Properties Along the Surface of Turbomachinery Blades.
W. K. Fentress. 1 Nov 67, 27p

Descriptors: (*Nerva reactor, Turbine blades), (*Turbine blades, *Boundary layers), Computer calculations, Gas flow.

For abstract, see NSA 31 12, number 35475.

WANL-TME-1698 PC$5.50/MF$2.25
Westinghouse Electric Corp., Pittsburgh, Pa. Astronuclear Lab.
User'S Manual for the List of Parts.
C. W. Laub, and B. C. Wells. Sep 67, 48p

Descriptors: (*Nerva reactor, *Management), (*Computer codes, *L codes), Computer calculations, Inventories, Manuals.

For abstract, see NSA 31 12, number 35476.

WANL-TME-1729 PC$9.75/MF$2.25
Westinghouse Electric Corp., Pittsburgh, Pa. Astronuclear Lab.
Procedure for Using the Computer Code of NASA Cr-710 to Obtain the Two-D Axisymmetric Flows Behind Blade Rows in Wet Vapor Turbines.
J. D. Milton. Dec 67, 134p

Descriptors: (*Nerva reactor, Turbine blades), (*Computer codes, *J codes), (*Turbine blades, *Gas flow), Turbines, Two-dimensional calculations.

For abstract, see NSA 31 12, number 35477.

WANL-TME-1974 PC$8.00/MF$2.25
Westinghouse Electric Corp., Pittsburgh, Pa. Astronuclear Lab.
Gdp: Generalized Document Processing.
F. J. Jr. LaPointe. 15 Oct 69, 98p

Descriptors: (*Nerva reactor, Computer codes), (*Computer codes, *G codes).

For abstract, see NSA 31 12, number 35478.

WANL-TME-2502 PC$4.00/MF$2.25
Westinghouse Electric Corp., Pittsburgh, Pa. Astronuclear Lab.
Computer-Programmed Mathematical Model for Reliability.
5 Jun 68, 14p

Descriptors: (*Nerva reactor, *Mathematical models), Computer calculations, Reliability.

For abstract, see NSA 31 12, number 35479.

WANL-TME-541 PC$4.00/MF$2.25
Westinghouse Electric Corp., Pittsburgh, Pa. Astronuclear Lab.
Preliminary Wanl Evaluation of the Nuclear Instrumentation for the Nrx-a Control System.
G. A. Gilmour. 1963, 17p

Descriptors: (*Nerva reactor, *Reactor instrumentation), Performance, Reactor control systems, Testing.

For abstract, see NSA 31 12, number 35463.

WANL-TME-761(Add.1)(Suppl.1) PC$4.00/MF$2.25
Westinghouse Electric Corp., Pittsburgh, Pa. Astronuclear Lab.
Nrx-A2 Safety Evaluation Report, Wanl-Tme--761.
E. H. Hemmerle. 22 Jul 64, 2p

Descriptors: (*Nrx-a2 reactor, *Reactor safety), Safety.

For abstract, see NSA 31 12, number 35464.

WANL-TME-790 PC$4.00/MF$2.25
Westinghouse Electric Corp., Pittsburgh, Pa. Astronuclear Lab.
Facility Fluid Additions for Various Operating Times of Nrx Reactors Up to 20 Minutes of Equivalent Full Power Operation.
S. Goldberg. 25 May 64, 11p

Descriptors: (*Nerva reactor, *Test facilities), Helium, Hydrogen, Nitrogen, Storage, Testing.

For abstract, see NSA 31 12, number 35465.

WANL-TMI-1006 PC$4.00/MF$2.25
Westinghouse Electric Corp., Pittsburgh, Pa. Astronuclear Lab.
Torque Tests on Instrument Parts, Seal Locking Devices.
G. Zibritosky, and H. Allison. Mar 64, 8p

Descriptors: (*Nrx-a1 reactor, *Fasteners), Mechanical tests, Seals, Torque.

For abstract, see NSA 31 12, number 35498.

WANL-TMI-1023 PC$4.00/MF$2.25
Westinghouse Electric Corp., Pittsburgh, Pa. Astronuclear Lab.
Follow-Up on Core Band Assembly Evaluation.
R. H. Appleman. 11 Jun 64, 1p

Descriptors: (*Nrx-a2 reactor, *Reactor cores), Design, Supports.

For abstract, see NSA 31 12, number 35499.

WANL-TMI-1027 PC$4.00/MF$2.25
Westinghouse Electric Corp., Pittsburgh, Pa. Astronuclear Lab.
Mechanical Design Evaluation of Loose Tie Rods in the Nrx-A1.
W. J. Schlitt. Apr 64, 5p

Descriptors: (*Nrx-a1 reactor, *Fasteners), Mechanical vibrations.

For abstract, see NSA 31 12, number 35500.

WANL-TMI-1085 PC$4.00/MF$2.25
Westinghouse Electric Corp., Pittsburgh, Pa. Astronuclear Lab.
Nrx-A2 Material Limitations.
J. J. Lescisin. 12 May 64, 2p

Descriptors: (*Nrx-a2 reactor, *Reactor components), Reactor materials, Specifications.

For abstract, see NSA 31 12, number 35501.

WANL-TMI-1091 PC$4.00/MF$2.25
Westinghouse Electric Corp., Pittsburgh, Pa. Astronuclear Lab.
Outer Reflector Sector Thermal Shock Test Feasibility Study.
P. Zemanick. 14 May 64, 7p

Descriptors: (*Nerva reactor, *Neutron reflectors), Heat transfer, Mathematical models, Thermal shock.

For abstract, see NSA 31 12, number 35502.

WANL-TMI-1111 PC$4.00/MF$2.25
Westinghouse Electric Corp., Pittsburgh, Pa. Astronuclear Lab.
Return Shipment of Nrx-A1.
E. K. Figenbaum. Jun 64, 10p

Descriptors: (*Nrx-a1 reactor, *Transport), Accelerometers.

For abstract, see NSA 31 12, number 35503.

WANL-TMI-1124 PC$4.00/MF$2.25
Westinghouse Electric Corp., Pittsburgh, Pa. Astronuclear Lab.
Normalization Factors for Nuclear Design Codes.
P. J. Sipush. 5 Jun 64, 5p

Descriptors: (*Nerva reactor, *Reactor kinetics), Computer codes, Neutron flux, Neutron transport.

For abstract, see NSA 31 12, number 35504.

WANL-TMI-1154 PC$4.00/MF$2.25
Westinghouse Electric Corp., Pittsburgh, Pa. Astronuclear Lab.
Nozzle Interface Seal.
S. V. Libbing. Jul 64, 6p

Descriptors: (*Nerva reactor, *Nozzles), Failures, Seals.

For abstract, see NSA 31 12, number 35505.

WANL-TMI-1157 PC$4.00/MF$2.25
Westinghouse Electric Corp., Pittsburgh, Pa. Astronuclear Lab.
Comparison of the S sub 2 and S sub 4 Approximations in the Dtk Transport Code.
M. D. Nelligan. 30 Jun 64, 6p

Descriptors: (*Nerva reactor, *Computer calculations), Comparative evaluations, Neutron transport, Reactivity coefficients.

For abstract, see NSA 31 12, number 35506.

WANL-TMI-1424 PC$4.00/MF$2.25
Westinghouse Electric Corp., Pittsburgh, Pa. Astronuclear Lab.
Analysis of Proposed Shield Seal Redesigns.
P. A. Stancampiano. 17 Mar 65, 9p

Descriptors: (*Nerva reactor, *Shielding), Comparative evaluations, Configuration, Design, Seals.

For abstract, see NSA 31 12, number 35507.

WANL-TMI-1440 PC$18.25/MF$2.25
Westinghouse Electric Corp., Pittsburgh, Pa. Astronuclear Lab.
Description of the Digital Analysis Programs Used to Analyze the Wide Band Test Data.
A. H. Killinger, C. P. Saalbach, W. C. McCune, and R. J. Kocur. 22 Mar 65, 302p

Descriptors: (*Nerva reactor, *Testing), A codes, Computer codes, Data processing, P codes, S codes.

For abstract, see NSA 31 12, number 35508.

WANL-TMI-1443 PC$4.25/MF$2.25
Westinghouse Electric Corp., Pittsburgh, Pa. Astronuclear Lab.
Glass Seals for Moisture Sealing Instrumentation Cables.
G. Chambers. 15 Apr 65, 23p

Descriptors: (*Nerva reactor, *Reactor instrumentation), Electric cables, Glass, Seals.

For abstract, see NSA 31 12, number 35509.

WANL-TMI-1471 PC$4.00/MF$2.25
Westinghouse Electric Corp., Pittsburgh, Pa. Astronuclear Lab.
Calibration and Proof Tests of the Nrx-A4 Leaf Springs (Emi-65).
J. M. Sucevic. 25 Jun 65, 8p

Descriptors: (*Nrx-a4-est reactor, *Springs), Calibration, Testing.

For abstract, see NSA 31 12, number 35510.

WANL-TMI-1503 PC$4.00/MF$2.25
Westinghouse Electric Corp., Pittsburgh, Pa. Astronuclear Lab.
Privy Roof Mounted Shield Vibration Analysis.
W. J. Persin. 18p

Descriptors: (*Nerva reactor, *Shielding), Mechanical vibrations.

For abstract, see NSA 31 12, number 35511.

WANL-TMI-1600 PC$11.75/MF$2.25
Westinghouse Electric Corp., Pittsburgh, Pa. Astronuclear Lab.
Description and Channel Operation of Ets-1 Data Acquisition System.
M. Vuckovich. Oct 65, 172p

Descriptors: (*Nerva reactor, *Data acquisition systems), Manuals, Test facilities, Testing.

For abstract, see NSA 31 12, number 35512.

WANL-TMI-1613 PC$4.75/MF$2.25
Westinghouse Electric Corp., Pittsburgh, Pa. Astronuclear Lab.
Conversion of Our Digital Computer Programs to the Interim and Intercomp Computers.
C. P. Saalbach. Dec 65, 31p

Descriptors: (*Nuclear facilities, *Computers), Ibm computers, Planning.

For abstract, see NSA 31 12, number 35513.

WANL-TMI-1617 PC$4.00/MF$2.25
Westinghouse Electric Corp., Pittsburgh, Pa. Astronuclear Lab.
Radiochemical Analysis of Nrx-A3 Nozzle Smear Samples.
W. A. Henninger. Dec 65, 12p

Descriptors: (*Nrx-a3 reactor, *Fission products), Deposits, Nozzles, Radiometric analysis.

For abstract, see NSA 31 12, number 35514.

WANL-TMI-1620 PC$4.00/MF$2.25
Westinghouse Electric Corp., Pittsburgh, Pa. Astronuclear Lab.
Reliability Aspects of Xe-1 Actuator Design Review.
F. Ottenheimer. 29 Dec 65, 6p

Descriptors: (*Xe-prime reactor, *Actuators), Design, Fabrication, Pneumatic controllers.

For abstract, see NSA 31 12, number 35515.

WANL-TMI-1734 PC$4.50/MF$2.25
Westinghouse Electric Corp., Pittsburgh, Pa. Astronuclear Lab.
Design Studies of Terrestrial Reactor-Electric Power Plants in the 100 kw(E) Range.
A. Selz, and Y. S. Tang. 1966, 30p

Descriptors: (*Power reactors, *Design), (*Package reactors, Design), Performance, Specifications.

For abstract, see NSA 31 12, number 35516.

WANL-TMI-1777 PC$4.00/MF$2.25
Westinghouse Electric Corp., Pittsburgh, Pa. Astronuclear Lab.
A-6 Lateral Support Spring Temperature-Load Test.
W. A. Solie. 26 Apr 67, 11p

Descriptors: (*Nrx-a6 reactor, *Springs), Supports, Temperature dependence, Testing.

For abstract, see NSA 31 12, number 35517.

WANL-TMI-1829 PC$4.00/MF$2.25
Westinghouse Electric Corp., Pittsburgh, Pa. Astronuclear Lab.
Q. C. Tension Tests of Xe-2 Inconel 718 Tie Rods.
L. E. Rostand. 12 Sep 67, 2p

Descriptors: (*Xe-2 reactor, *Fasteners), Mechanical tests, Tensile properties.

For abstract, see NSA 31 12, number 35518.

WANL-TMI-623 PC$4.00/MF$2.25
Westinghouse Electric Corp., Pittsburgh, Pa. Astronuclear Lab.
Gap Measurements Between Core Elements in a Full Core of Nine-Inch Long Elements, Banded Core.
R. H. Appleman. 24 Apr 63, 7p

Descriptors: (*Space power reactors, Reactor cores), (*Reactor cores, *Specifications), Fuel assemblies.

For abstract, see NSA 31 12, number 35480.

WANL-TMI-842 PC$4.00/MF$2.25
Westinghouse Electric Corp., Pittsburgh, Pa. Astronuclear Lab.
Residual Activity of Nrx-A2 Reactor Components.
L. O. Ricks. 28 Oct 63, 3p

Descriptors: (*Nrx-a2 reactor, *Reactor components), Fission products, Radiation doses.

For abstract, see NSA 31 12, number 35481.

WANL-TMI-850 PC$4.00/MF$2.25
Westinghouse Electric Corp., Pittsburgh, Pa. Astronuclear Lab.
Digital Computer Program for Investigating Flow Instabilities.
G. Collier. 5 Nov 63, 7p

Descriptors: (*Nerva reactor, *Compressible flow), Computer calculations, Stability.

For abstract, see NSA 31 12, number 35482.

WANL-TMI-861 PC$4.75/MF$2.25
Westinghouse Electric Corp., Pittsburgh, Pa. Astronuclear Lab.
Nrx, Data Systems Accuracy.
C. T. Schaedel. 11 Nov 63, 35p

Descriptors: (*Nerva reactor, *Test facilities), Data acquisition, Measuring instruments, Transducers.

For abstract, see NSA 31 12, number 35483.

WANL-TMI-864 PC$4.00/MF$2.25
Westinghouse Electric Corp., Pittsburgh, Pa. Astronuclear Lab.
Total Peripheral Leakage Area, Nd 201 Core.
14 Nov 63, 2p

Descriptors: (*Nerva reactor, *Leaks).

For abstract, see NSA 31 12, number 35484.

WANL-TMI-865 PC$4.00/MF$2.25
Westinghouse Electric Corp., Pittsburgh, Pa. Astronuclear Lab.
Feed System Performance, Ne8010e.
S. Cemi. 14 Nov 63, 2p

Descriptors: (*Nrx-a1 reactor, *Reactor start-up).

For abstract, see NSA 31 12, number 35485.

WANL-TMI-873 PC$4.25/MF$2.25
Westinghouse Electric Corp., Pittsburgh, Pa. Astronuclear Lab.
Data Requirements of Nrx-a Reactor, Vibration and Shock Test.
C. V. Buzza. 25p

Descriptors: (*Nrx-a1 reactor, *Impact shock), Mechanical vibrations, Resonance, Testing, Transfer functions.

For abstract, see NSA 31 12, number 35486.

WANL-TMI-881 PC$4.00/MF$2.25
Westinghouse Electric Corp., Pittsburgh, Pa. Astronuclear Lab.
Measurement of Nuclear Heating in Materials by Use of a Rod Calorimeter.
W. E. Austin. 3 Dec 63, 8p

Descriptors: (*Nerva reactor, *Radiation heating), Calorimeters.

For abstract, see NSA 31 12, number 35487.

WANL-TMI-882 PC$4.00/MF$2.25
Westinghouse Electric Corp., Pittsburgh, Pa. Astronuclear Lab.
Neutron Balance Code for P1mg, BAL.-1.
P. Heiser, and H. Woodsum. 5 Dec 63, 15p

Descriptors: (*Nerva reactor, *Computer calculations), Comparative evaluations, Neutron transport, Reactor kinetics.

For abstract, see NSA 31 12, number 35488.

WANL-TMI-892 PC$4.00/MF$2.25
Westinghouse Electric Corp., Pittsburgh, Pa. Astronuclear Lab.
Calculation of Total Gas Usage for Nrx-a Reactors.
J. Rovnak. 12 Dec 63, 11p

Descriptors: (*Nrx-a2 reactor, *Testing), Fluid flow, Gases, Test facilities.

For abstract, see NSA 31 12, number 35489.

WANL-TMI-905 PC$4.00/MF$2.25
Westinghouse Electric Corp., Pittsburgh, Pa. Astronuclear Lab.
Tie Rod Leakage Seal Tests.
H. J. Fix. 23 Dec 63, 6p

Descriptors: (*Nerva reactor, *Seals), Leaks, Testing.

For abstract, see NSA 31 12, number 35490.

WANL-TMI-906 PC$4.00/MF$2.25
Westinghouse Electric Corp., Pittsburgh, Pa. Astronuclear Lab.
"O" Ring Compression Test.
F. M. Kotulak. 13 Jan 64, 15p

Descriptors: (*Nerva reactor, Rubbers), (*Rubbers, *Compressibility), Mechanical properties, Seals.

For abstract, see NSA 31 12, number 35491.

WANL-TMI-911 PC$4.00/MF$2.25
Westinghouse Electric Corp., Pittsburgh, Pa. Astronuclear Lab.
Core Band Tensile Test.
H. Allison, and G. Zibritosky. 13 Jan 64, 7p

Descriptors: (*Nerva reactor, *Reactor cores), Mechanical properties, Mechanical tests, Supports, Tensile properties, Titanium.

For abstract, see NSA 31 12, number 35492.

WANL-TMI-917 PC$4.00/MF$2.25
Westinghouse Electric Corp., Pittsburgh, Pa. Astronuclear Lab.
Required Convergence and SN Order in Dan Calculations.
C. Romesburg. 20 Jan 64, 6p

Descriptors: (*Nerva reactor, *Neutron transport), Computer calculations, Distribution, Eigenvalues, Neutron flux, Reactor kinetics.

For abstract, see NSA 31 12, number 35493.

WANL-TMI-937 PC$4.00/MF$2.25
Westinghouse Electric Corp., Pittsburgh, Pa. Astronuclear Lab.
Digital Dynamic Reactor - II.
P. Dickson, D. Drawbaugh, and J. Riese. 21 Jan 64, 5p

Descriptors: (*Nerva reactor, *Reactor kinetics), Computer calculations, Fluid flow, Heat transfer, Pile oscillation techniques, Stability, Transfer functions.

For abstract, see NSA 31 12, number 35494.

WANL-TMI-946 PC$4.00/MF$2.25
Westinghouse Electric Corp., Pittsburgh, Pa. Astronuclear Lab.
Dome End Support Ring Pre-Irradiation Test.
F. M. Kotulak. 14 Feb 64, 19p

Descriptors: (*Nerva reactor, *Reactor components), Mechanical properties, Testing.

For abstract, see NSA 31 12, number 35495.

WANL-TMI-963 PC$6.75/MF$2.25
Westinghouse Electric Corp., Pittsburgh, Pa. Astronuclear Lab.
Nrx-A1 Reactor Shipping Report.
R. D. Davis. 12 Mar 64, 73p

Descriptors: (*Nrx-a1 reactor, *Transport), Inspection.

For abstract, see NSA 31 12, number 35496.

WANL-TMI-983 PC$4.25/MF$2.25
Westinghouse Electric Corp., Pittsburgh, Pa. Astronuclear Lab.
Galling of Fuel Cluster Attachment Hardware.
F. M. Kotulak. Mar 64, 21p

Descriptors: (*Nerva reactor, *Fasteners), Adhesion, Fuel element clusters.

For abstract, see NSA 31 12, number 35497.

WANL-XE-SA-319 PC$8.25/MF$2.25
Westinghouse Electric Corp., Pittsburgh, Pa. Astronuclear Lab.
Xe-Prime, EP-Iva Transfer Function Measurements.
D. E. Noe. 31 Jan 69, 101p

Descriptors: (*Xe-prime reactor, *Reactor kinetics), Performance testing, Transfer functions.

For abstract, see NSA 31 12, number 35519.

19. ORDNANCE

19A. Ammunition, Explosives, and Pyrotechnics

AD-A010 710/2GA PC$3.25/MF$2.25
Frankford Arsenal Philadelphia Pa
Projectile Spin Rate Measurement Using Induced Electromotive Force Techniques.
Engineering project rept.,
M. E. Goldser. May 75, 12p Rept no. FA-TR-75031

Descriptors: *Projectiles, *Ballistic trajectories, Spinning(Motion), Measurement, Magnetization, Firing tests(Ordnance).

This report deals with the problem of measuring the rotation of a projectile (spin) without altering the center of gravity, exterior surface and true weight of the projectile. Twenty millimeter projectiles were magnetized and fired parallel to a 12 foot long coil. The induced electromotive force (e.m.f.) was amplified and recorded on magnetic tape for playback through an oscillograph recorder. The period of the generated sine wave was then measured to determine the spin (f=1/T). Different barrels were used to obtain data over a wide range of twists. It was found that this system provided a reliable and 'production line' method for the measurement of spin rate.

AD-A010 744/1GA PC$3.75/MF$2.25
MRC Corp., Baltimore, Md
Development of High Speed Equipment for Sealing Non-Electric Detonators.
Final rept.,
Nathan D. Isaacs. Sep 74, 35p Rept no. MRC-644-F
Contract DAAA21-74-C-0074

Descriptors: *Detonators, *Assembly, *Automation, Crimping tools, Cams, Sealed systems, Fabrication, Production control.

A program was conducted to develop high speed equipment for sealing non-electric detonators at the rate of 1200 per minute. An engineering study was conducted of the appropriate manufacturing operation including presently employed techniques. A bench model was fabricated and inert tests were performed to evaluate the feasibility of MRC's concepts. The ability to produce a uniform product in accordance with the M55 detonator drawing requirements at the desired production rate was demonstrated. It has been concluded that it is feasible to insert closure discs and crimp and seal 1200 M55 detonators per minute using MRC's concepts.

AD-A010 777/1GA PC$5.25/MF$2.25
General Electric Co Burlington Vt Armament Systems Dept
R. F. Remote Set Information Link Study.
Final rept. Jun 74-Mar 75,
M. D. Egtvedt, J. A. Kinzel, and R. T. Ziemba. Apr 75, 124p Rept no. 75APB521
Contract DAAA21-74-C-0474

Descriptors: *Data links, *Rocket fuzes, *Time fuzes, Remote control, Fuze setters, Quartz resonators, Transmitters, Receivers, Electronic equipment, Radio links.

The report describes the design, development and test of an rf data link system whose function is to remotely set an electronic time fuze (2.75 inch rocket) to one of three options following rocket launch.

AD-A011 026/2GA PC$5.75/MF$2.25
Explosives Research and Development Establishment Waltham Abbey (England)
Proceedings of the Symposium on Lead and Copper Azides Held on 25th-26th October 1966.
26 Oct 66, 139p

Descriptors: *Lead azides, Chemical analysis, Decomposition, Polymorphism, Azides, Copper compounds, Meetings, Great Britain, Corrosion, Manufacturing, Explosions, Hazards, Crystal structure, Synthesis(Chemistry).
Identifiers: *Copper azides.

The purpose of the Symposium was to survey the present state of knowledge of the chemistry of lead azide as it affects preparation and use of the substance as an initiating explosive. Discussion includes the crystallography of lead and copper azides, the effect of environmental conditions, analytical problems and the hazards in preparation and handling.

AD-A011 047/8GA PC$3.75/MF$2.25
Naval Ordnance Lab White Oak Md
Design and Development of a Booster for the FMU-117B Bomb Fuze.
Technical rept.,
Louis J. Montesi. 30 Apr 75, 47p Rept no. NOLTR-74-185

Descriptors: *Bomb fuzes, *Explosive trains, Explosives, Boosters(Explosives), Fuze functioning elements, Pellets, Sensitivity.
Identifiers: FMU-117 fuzes, FMU-117B fuzes.

The FMU-117B Bomb Fuze is being developed to replace the Mk-344/Mk-376 Bomb Fuze series. The explosive train for the FMU-117B fuze is similar to the older fuze, except that the tetryl in the booster pellet will be replaced by either Comp A-5 or CH-6. Safety and reliability test data has been collected for both substitute explosives. The results indicate that CH-6 booster pellets have better physical properties than Comp-A-5, but both are suitable explosives to replace tetryl in this application. However, because of cost considerations, Comp A-5 is being recommended for use in the FMU-117B Bomb Fuze.

N75-22253/9GA PC$3.75/MF$2.25
Defence Research Establishment Valcartier (Quebec).
Laser, Armaments, Explosives, and Fuel Research for Military Purposes.
Annual Report, 1973.
1974, 46p DREV-705/74
In French and in English.

Descriptors: *Explosives, *Guns (Ordnance), *Lasers, Binders (Materials), Smoke, Solid propellants.

For abstract, see STAR 1313

19D. Explosions, Ballistics, and Armor

AD-A010 737/5GA PC$3.75/MF$2.25
Norwegian Defence Construction Service Oslo
Model Tests of Accidential Explosions in Underground Ammunition Storage I: Chamber Pressure.
Jan 74, 28p

Descriptors: *Underground facilities, *Ammunition, *Explosions, Explosives, Detonations, Detonation waves, Burning rate, Pressure, Norway.
Identifiers: *Ammunition storage, *Underground storage.

The report is a short version of a second report in a series of five describing the results from an extensive series of model tests on underground ammunition storage. The main objectives of the experiments discussed in this paper were to determine the pressure-time history from an explosive charge detonated in chambers varying: loading density, venting, type of explosive (TNT, PETN, AN/FO, RDX, ALUMIT, DYNAMITE and COMP.B) and to compare results with theoretical work and other experiments.

AD-A010 738/3GA MF$2.25
Norwegian Defence Construction Service Oslo
One-Dimensional Blast Wave Propagation.
Jan 74, 29p
Availability: Available in microfiche only.

Descriptors: *Underground facilities, *Ammunition, *Explosions, Blast waves, Wave propagation, Detonations, Pressure, Scaling factors, Norway.

A series of experiments is reported on one-dimensional blast wave propagation in steel tubes (with diameters of 5 and 20 cm respectively), in a concrete tube (with a diameter of 80 cm), and in rock (with an effective diameter of 600 cm) with pressures ranging from 0.005 to 70 bar. The blast wave originates from the detonation of TNT charges placed in the center of tubes/tunnel.

AD-A010 742/5GA PC$3.75/MF$2.25
Norwegian Defence Research Establishment Kjeller
Investigations of Underground Explosions with Model Tests. Preliminary Report 1.
Teknisk notat,
K. G. Schmidt. 20 Mar 75, 38p Rept no. NDRE-VM-182

Descriptors: *Ammunition, *Underground explosions, *Blast waves, Scaling factors, Shock waves, Predictions, Model tests, Norway.

Identifiers: *Underground storage.

A preliminary report describing main results at the present stage of an investigation of underground explosions with model tests in the scale 1/100 is presented. Pressure data from measurements using the models are given. It was expected that if the proposed scaling laws disagreed too much with the physics involved, self similarity would not take place. It was also expected that this could be observed experimentally. The data, however, do not appear to contradict self similarity.

AD-A010 816/7GA PC$3.25/MF$2.25
Naval Surface Weapons Center Dahlgren Lab Va
On the Deflection of Projectiles Due to Rotation of the Earth.
Technical rept.,
G. Preston Burns. Jun 75, 15p Rept no. NSWC/DL-TR-3218

Descriptors: *Projectile trajectories, *Coriolis effect, Acceleration, Deflection, Azimuth.

An analysis of the effect of the Coriolis acceleration on the flight of projectiles fired from the surface of the Earth has been extended to include bodies fired or released from any altitude above the surface of the Earth. An equation for Coriolis deflection perpendicular to the line of fire and the general condition for zero deflection are derived. Directions of Coriolis deflections are tabulated for bodies released horizontally at altitude Y sub o.

EERL-MP-E-75-4 PC$4.00/MF$2.25
Army Engineer Waterways Experiment Station, Livermore, Calif. Explosive Excavation Research Lab.
Results of Airblast Overpressure Measurement Program at Project R.D. Bailey.
M. J. Hoeft. Feb 75, 52p

Descriptors: (*Chemical explosions, Excavation), (*Excavation, *Shock waves), (*Nuclear explosions, *Simulation), Blast effects, Pressure measurement.

For abstract, see NSA 31 12, number 32983.

UCID-16708 PC$4.00/MF$2.25
California Univ., Livermore Lawrence Livermore Lab.
Assessment of Microfracturing in Rio Blanco Postshot Core RB-AR-02.
I. Y. Borg. 26 Feb 75, 16p
Contract W-7405-Eng-48

Descriptors: (*Piceance creek basin, *Fractures), Explosive stimulation, Mechanical effects, Natural gas, Performance, Rio blanco event, Rocks.

For abstract, see NSA 31 12, number 32986.

UCRL-51536 PC$4.00/MF$2.25
California Univ., Livermore Lawrence Livermore Lab.
Essex-Diamond Ore Research Program: The Development and Manufacture of a Gelled Nitromethane Explosive for Project Essex.
F. Helm, R. Boat, M. Finger, and D. Wooster. 10 Oct 74, 46p WES-MP-E-74-4, DNA-PR-0004

Descriptors: (*Chemical explosives, *Fabrication), (*Cratering explosions, *Performance), (*Nuclear explosions, *Simulation), Chemical explosions, Safety.

For abstract, see NSA 31 12, number 32988.

UCRL-51740 PC$5.45/MF$2.25
California Univ., Livermore Lawrence Livermore Lab.
Controlled Blasting Calculations with the TENSOR74 Code.
M. Heusinkveld, J. Bryan, D. Burton, and C. Snell. 24 Feb 75, 72p
Contract W-7405-Eng-48

Descriptors: (*Chemical explosions, *Excavation), (*Nuclear explosions, *Simulation), (*Computer codes, *T codes), Rocks.

For abstract, see NSA 31 12, number 32989.

19E. Fire Control and Bombing Systems

AD-A010 600/5GA PC$5.25/MF$2.25
Air Force Avionics Lab Wright-Patterson AFB Ohio
Air-to-Air Gunnery Qualitative Variables.
Final technical rept.,
Joseph E. Justin. Apr 74, 111p Rept no. AFAL-TR-74-26
See also report dated Sep 73, AD-775 360.

Descriptors: *Aircraft fire control systems, *Aerial gunnery, Air to air, Weapon delivery, Man machine systems, Flight maneuvers, Kill probabilities, Mathematical models.

In this report candidate qualitative variables of air-to-air gunnery were investigated. They are suggested for consideration based on the needs of those responsible for development and testing of gunnery systems. The variables are defined as any measurable parameter descriptive of the system function. They are used for evaluation of gunnery systems at all levels of development and would have generally accepted verification of their capabilities. The variables suggested as candidates are: the probability hit density function; the Cooper-Harper pilot rating scale; the compensatory tracking parameters of the control response criteria; the envelope parameters of time of flight of the bullet and the turning rate of aircraft; and the time efficiency of the kill. The conclusions of this paper will hopefully provide insight for further detailed analysis. The paper represents the results available in December 1973.

AD-A010 656/7GA PC$3.75/MF$2.25
Army Materiel Systems Analysis Agency Aberdeen Proving Ground Md
An Approach to Fire Control System Computations and Stimulations.
Technical rept.,
James F. Leathrum. Apr 75, 50p Rept no. AMSAA-TR-126

Descriptors: *Fire control systems, *Computerized simulation, Control theory, Targets, Models, Algorithms, Kalman filtering, Optimization.

This report summarizes the mathematical and computational foundations of modern fire control systems. The fundamentals of target models and Kalman estimators are developed in a tutorial disucssion. A new approach to fire control computations based upon a hybrid coordinate system is proposed and its advantages are cited. The structure of fire control system simulation software is provided, and supporting algorithms are documented.

19F. Guns

AD-A010 662/5GA PC$5.25/MF$2.25
Watervliet Arsenal N Y
Dynamic Response of the M113 Gun Tube to Travelling Ballistic Pressure and Data Smoothing as Applied to XM150 Acceleration Data,
T. Simkins, G. Pflegl, and R. Scanlon. Apr 75, 112p Rept no. WVT-TR-75015

Descriptors: *Gun barrels, *Interior ballistics, Dynamic response, Finite element analysis, Recoil, Resonant frequency, Computer programming.
Identifiers: M-113 guns(175-MM), M-150 guns, XM-150 guns, NASTRAN computer code.

This work is concerned with the response of the M113, 175mm gun tube to the travelling interior ballistic pressure pulse initiated upon firing. The analysis was performed by the NASTRAN finite-element computer code. Initial results indicate that peak dynamic stresses (axisymmetric) can be significantly greater than the static Lame stresses - normally computed for design purposes. The results compare favorably with strain data accumulated during test firing programs conducted by the Ballistic Research Laboratories at Aberdeen, Maryland.

PAT-APPL-470 416/GA PC$3.25/MF$2.25
Department of the Navy Washington D C
Laser Type Weapon Fire Simulation System.
Patent Application,
Wendell N. Mohon. Filed 16 May 74, 12p Rept no.
Government-owned invention available for licensing. Copy of application available NTIS.

Descriptors: *Training devices, *Gunfire, *Lasers, Military training, Holography, Laser beams, Simulators, Patents.
Identifiers: *Patent applications, PAT-CL-35-25.

The patent application describes a laser type weapon fire simulation system in which a laser type weapon simulator capable of producing a laser beam when fired is combined with a holographic means capable of producing a three dimensional virtual image of a target. It contains a detector screen means to provide the effect of realism in firing at a three dimensional target and obtaining an immediate visual score.

19G. Rockets

AD-A010 657/5GA PC$19.25/MF$2.25
Army Missile Research Development and Engineering Lab Redstone Arsenal Ala
Experimental Investigation of Several Wraparound Fins on Bodies of Revolution from Mach 0.3 to 1.3.
Data rept.,
C. Wayne Dahlke. Sep 71, 810p Rept no. RD-TM-71-12

Descriptors: *Fin stabilized ammunition, *Aerodynamic forces, Tube launched, Fins, Bodies of revolution, Wind tunnel tests, Roll, Aerodynamic stability.
Identifiers: Wraparaound fins.

A wind tunnel test was conducted for several wraparound fin configurations on bodies of revolution at Mach numbers ranging from 0.3 to 1.3. Aerodynamic forces and moments were measured by five strain gage balances. A complete listing of the summary data is presented in tabular form.

AD-A010 741/7GA PC$3.25/MF$2.25
Martin Marietta Aerospace Orlando Fla
Terminal Homing Guidance for the Shoulder Launched Direct Fire Missile.
Final technical rept. Jun 74-Mar 75,
R. C. Scott. May 75, 184p Rept no. OR-13690
Contract DAAH01-74-C-0954

Descriptors: *Shoulder launched weapons, *Laser guidance, *Terminal homing, Terminal guidance, Automatic pilots, Configuration management, Guided missile components, Computerized simulation.

This 10 month program derived the conceptual design of a small diameter, shoulder launched, direct fire missile for use as a guidance test

bed. The resulting design is practical, versatile, and modular, and can exercise a variety of present and advanced technology seekers over a broad range regime. Although the missile makes maximum use of off-the-shelf components and is well within existing technology capabilities, its accuracy potential is sufficient for any anticipated guidance system.

N75-21356/1GA PC$3.25/MF$2.25
Materials Research Labs., Maribyrnong (Australia).
Physical Strenth Test for Exit Cone of Motor Assemblies for Rocket Heat 66 mm L1A2.
J. H. Cole, and B. J. Baxter. Jan 75, 21p MRL-TN-360

Descriptors: *Mechanical properties, *Rocket nose cones, Physical properties, Rubber, Strain gages.

For abstract, see STAR 1313

20. PHYSICS

20A. Acoustics

AD-A010 629/4GA PC$4.75/MF$2.25
Army Construction Engineering Research Lab Champaign Ill
Construction Noise: Specification, Control, Measurement, and Mitigation.
Final rept.,
P. D. Schomer, and B. Homans. Apr 75, 81p
Rept no. CERL-TR-E-53

Descriptors: *Construction, *Noise pollution, Construction equipment, Noise reduction, Acoustic measurement, Physiological effects, Specifications, Military requirements.
Identifiers: *Noise levels, *Noise abatement, Army Corps of Engineers.

In recent years, noise from construction sites has been an increasing problem for the Corps of Engineers. This report introduces noise as a problem, how it affects man, and Army requirements for the prevention of excessive noise. With this background, sample specifications are prepared to control construction-site noise and the means established to monitor compliance. Finally, information is given on state and local noise regulations and on noise-mitigation techniques.

AD-A010 868/8GA PC$4.75/MF$2.25
Naval Postgraduate School Monterey Calif
An Analysis of a Ray Trace Experiment on the Underwater Range at Dabob Bay.
Master's thesis,
Victor Joseph Bankston. Mar 75, 86p

Descriptors: *Underwater sound, *Ray tracing, Acoustic velocity, Sonar, Hydrophones, Underwater tracking, Computer programs, Theses, Washington(State).
Identifiers: Dabob Bay, Keyport(Washington).

An analysis of an experiment to determine the precision, the effects of varying amounts of environmental data, and the feasibility of the use of historical environmental data at the NAVTORPSTA, Keyport, Washington, Dabob Bay facility is presented. The analysis verifies and extends the results of a preliminary investigation of the experimental data. The experiment consisted of tracking a 75-kHz source at six depths at each of six horizontal ranges. The data were analyzed using an isogradient ray-tracing program. The results showed that the precision of the range position as determined by the ranging system is dependent only on the rise-time of the 75kHz signal; that the use of less environmental data and historical data as the environmental input for position calculations have been shown to cause only a minor degradation in the accuracy of the ranging system.

AD-A010 881/1GA PC$5.25/MF$2.25
Georgetown Univ Washington D C Dept of Physics
Effects of Lamb Waves on Ultrasonic Bounded Beam Propagation.
Technical rept. 1 Mar-31 May 75,
Thomas J. Plona. 31 May 75, 121p Rept nos.
GUUS-05753, TR-3
Contract N00014-75-C-0333
Doctoral thesis.

Descriptors: *Underice, *Ultrasonic radiation, Arctic regions, Reflection, Sound transmission, Sea ice.
Identifiers: *Lamb waves.

Schlieren techniques are used to show that non-specular reflections of bounded sonic beams occur from a solid-plate/water interface when a Lamb mode of the solid plate is excited by the incident sonic beam impinging at a Lamb angle. The resulting change in the profile of the reflected beam is measured and compared to predictions based on theory.

AD-A011 110/4GA PC$4.25/MF$2.25
Scripps Institution of Oceanography San Diego Calif Marine Physical Lab
Vertical Directionality of Noise and Signal Transmissions During Operation Church Anchor.
Summary rept.,
Victor C. Anderson. 15 Nov 74, 55p Rept nos.
SIO-Ref-75-1, MPL-U-53/74
Contract N00014-69-A-0200-6002

Descriptors: *Underwater sound, Power spectra, Background noise, Hydrophones, Ambient noise, Depth, Sound pressure, Superlow frequency, Beam forming, Stabilized platforms.
Identifiers: Floating laboratory instrument platforms, Church Anchor operation.

A vertical array of 20 vibration isolated hydrophones was suspended from the Research Platform FLIP at various depths from 713m to 4816m. Preformed sets of beams were formed with a digital beamformer to observe the vertical noise distribution at three to four frequencies between 20 and 100 Hz. Directional spectra derived from 10 minutes samples of digital records are presented. Several contour plots of amplitude distributions are also shown for both signal and noise records.

N75-21280/3GA PC$3.75/MF$2.25
National Aeronautics and Space Administration. Lewis Research Center, Cleveland, Ohio.
Analysis of Ground Reflection of Jet Noise Obtained with Various Microphone Arrays over an Asphalt Surface.
J. H. Miles. 1975, 44p NASA-TM-X-71696, E-8299
Conf-Presented at the 89TH Meeting of the Acoust. Soc. Of AM., Austin, Tex., 8-11 Apr. 1975.

Descriptors: *Asphalt, *Ground effect, *Jet aircraft noise, *Microphones, Mathematical models, Noise propagation, Noise reduction, Signal reflection, Transfer functions.

For abstract, see STAR 1313

N75-22095/4GA PC$3.25/MF$2.25
Purdue Univ., Lafayette, Ind. School of Aeronautics and Astronautics.
Amplification, Attenuation, and Dispersion of Sound in Inhomogeneous Flows.
C. P. Kentzer. 15 Apr 75, 16p NASA-CR-142647, AA-75-1
Contract NGR-15-005-174
Conf-Presented at the 89TH Meeting of the Acoust. Soc. Of AM., Austin, Tex., 7-11 Apr. 1975.

Descriptors: *Acoustic attenuation, *Flow characteristics, *Nonuniform flow, *Sound amplification, *Sound waves, *Wave dispersion, Kinetic energy, Thermal energy, Wave propagation, Wavelengths.

For abstract, see STAR 1313

20B. Crystallography

AD-A010 560/1GA PC$3.25/MF$2.25
Pittsburgh Univ Pa Dept of Chemistry
Magnetocrystalline Anisotrophy of SmCo5 and Its Interpretation on a Crystal-Field Model,
S. G. Sanker, V. U. S. Rao, E. Segal, W. E. Wallace, and W. G. D. Frederick. 7 Feb 74, 7p
ARO-5375.26-M
Grants DA-ARO-D-31-124-71-G74, NSF-GU-3184
Availability: Pub. in Physical Review B, v11 n1 p435-439, 1 Jan 75.

Descriptors: *Crystallography, Magnetic properties, Anisotropy, Samarium compounds, Cobalt compounds, Yttrium compounds, Single Crystals, Reprints.

Results of magnetization measurements on carefully prepared single crystals of SmCo5 are presented over the temperature range 4-970 K.

AD-A010 843/1GA PC$3.25/MF$2.25
Pennsylvania Univ Philadelphia Lab for Research on the Structure of Matter
Raman Scattering by Wave-Vector-Dependent LO-Phonon-Plasmon Modes IN n-InAs,
S. Buchner, and E. Burstein. 12 Jun 74, 5p ARO-11716.1-P
Grant DAHC04-74-G-0181
Availability: Pub. in Physical Review Letters, v33 n15 p908-911, 7 Oct 74.

Descriptors: *Raman spectra, *Scattering, *Phonons, *Plasmons, Semiconductors, Indium alloys, Arsenides, Reprints.
Identifiers: Indium arsenide, Raman scattering, Wave vectors.

We elucidate the relative roles played by the accumulation space-charge region and by the skin depth in determining the magnitude of the wave vectors of the coupled LO-phonon-plasmon modes which take part in Raman scattering in n-InAs at the E sub 1 gap. (Author)

AD-A010 856/3GA PC$4.25/MF$2.25
Princeton Univ N J Dept of Chemistry
Spectroscopic Properties of Rare Earth Borohydrides: Er(BH4)3-3THF in Pure and Mixed Crystals.
Technical rept. no. 7, 1 Jan-1 Jun 75,
E. R. Bernstein, and K. M. Chen. 12 Jun 75, 53p
Contract N00014-67-A-0151-0032

Descriptors: *Erbium compounds, *Borohydrides, Crystals, Rare earth compounds, Crystal structure, Spectrum analysis, Synthesis(Chemistry), Molecular energy levels, Infrared spectra, Raman spectra.
Identifiers: Ligand fields, Lattice vibrations.

The optical spectra of Er(BH4)3-3THF neat crystals and La, Gd, Y(BH4)3-3THF mixed crystals are reported and analyzed. Lanthanum borohydride is found to have a different room temperature crystal structure (triclinic) from Er, Gd, Y(BH4)3-3THF(Pbcn). At low temperature the Pbcn crystals undergo a phase transition to a structure with two crystallographically inequivalent sites in a unit cell. The optical spectra of Er(BH4)3-3THF in Er, Y, Gd(BH4)3-3THF crystals clearly evidence these two sites. Large

vibronic intensity is observed at 1.6K and 77K and nine 'molecular' vibrations are assigned. These modes are quite similar to those found for U(BH4)4. Er(BH4)3-3THF/La(BH4)3-3THF spectra are very different: no vibronic transitions are observed but many (often upwards of fifty for a given manifold) weak sharp 'satellite' lines are found associated with pure electronic transitions. These data are discussed in terms of structural differences and comments on bonding and covalent character in lanthanide borohydrides are made.

AD-A010 890/2GA PC$3.25/MF$2.25
Maine Univ Orono Dept of Physics
Effects of Dielectric and Conductivity Anisotropies on Molecular Alignment in a Liquid Crystal,
E. F. Carr, W. T. Flint, and J. H. Parker. 30 Dec 74, 6p ARO-7612.14-P
Grants DA-ARO-D-31-124-71-G135, DA-ARO-D-31-124-G1042
Availability: Pub. in Physical Review A, v11 n5 p1732-1736 May 75.

Descriptors: *Dielectric properties, *Conductivity, *Liquid crystals, *anisotropy, Electric fields, Magnetic fields, Alignment, Reprints.
Identifiers: Molecular alignment, Nematic fields.

The relative effectiveness of electric and magnetic fields for producing molecular alignment in a nematic liquid crystal has been investigated while changing the magnitudes of the dielectric and conductivity anisotropies. The comparison was made for an ordering of the molecules such that the average angle that a molecule makes with the magnetic field is 45 deg. A relationship involving dielectric, conductivity, and magnetic permeability anisotropies was found to be satisfied in a range of magnetic fields strengths of 3-6 kG. It the torque due to the conductivity anisotropy was greater than the torque due to the dielectic anisotropy, stable William domains were likely to be observed, but if it was less, stable Williams domains were unlikely to occur. This has been shown earlier for materials exhibiting a negative dielectric anisotropy but this work emphasizes materials with a positive dielectirc anisotropy.

AD-A010 903/3GA PC$3.25/MF$2.25
Yale Univ New Haven Conn Dept of Physics
Orientational Order in Impure Liquid Crystals.
Technical rept.,
James R. McColl. 21 Oct 74, 4p Rept no. TR-11
Contract N00014-67-A-0097-0013
Availability: Pub. in Jnl. of Chemical Physics, v62 n4 p1593-1595, 15 Feb 75.

Descriptors: *Liquid crystals, Chemical composition, Impurities, Transition temperature, Concentration(Chemistry), Reprints.

It is shown that the presence of small amounts of impurities in nematic liquid crystals does not normally change the nematic-isotropic transition value of the nematic order parameter, but merely shifts the temperature of the transition. (Author)

AD-A011 101/3GA PC$3.25/MF$2.25
Rensselaer Polytechnic Inst Troy N Y Dept of Materials Engineering
Interdiffusion of Hydrogen and Alkali Ions in a Glass Surface.
Technical rept.,
Robert H. Doremus, and E. K. Pavelchek. Jun 75, 20p
Contract N00014-67-A-0117-0014

Descriptors: *Diffusion, *Glass, *Hydrogen, *Alkali metals, Profiles, Surfaces, Ions, Diffusion coefficient, Concentration(Composition).

Experimental data on the interdiffusion of hydrogen and alkali ions in glass are examined using a concentration-dependent interdiffusion coefficient, taking into account surface dissolution. The comparisons between calculated and experimental concentration profiles and diffusion coefficients are more satisfactory than for a concentration-independent diffusion coefficient, and support the use of the interdiffusion coefficient.

COM-75-50319/3GA Not available NTIS
National Bureau of Standards, Washington, D.C.
The Crystal Structure of Ca(BF4)2.
Final rept.,
T. H. Jordan, B. Dickens, L. W. Schroeder, and W. E. Brown. 1975, 4p
Sponsored in part by American Dental Association, Chicago, Ill.
Pub. in Acta Crystallographica, vB31 pt3 p669-672 Mar 75.

Descriptors: *Crystal structure, Calcium inorganic compounds, Borates, Fluorine inorganic compounds, X ray diffraction, Lattice parameters.
Identifiers: *Calcium tetrafluoroborates, Reprints.

Ca(BF4) crystallizes in the orthorhombic space group Pbca with Z=8. The unit cell parameters are a=9.2792(6), b=8.9103(10) and c=13.3719(10)A. The structure was determined from the Patterson function and refined by full-matrix least-squares to Rw(F)=0.024, S=1.67, using 2896 measurable x-ray data collected by a counter method and corrected for absorption. The refinement allowed for anisotropic thermal motion, isotropic secondary extinction and anomalous dispersion.

20C. Electricity and Magnetism

AD-A010 564/3GA PC$3.25/MF$2.25
Delaware Univ Newark Dept of Physics
Microwave-Optical Multiple Resonance and Dynamic Interconversion of Configurations in Excited Molecular States,
Albert L. Shain, and Mark Sharknoff. 30 May 73, 5p ARO-9460.2-C
Grants DA-ARO-D-31-124-71-G86, NSF-GP-29519
Availability: Pub. in Chemical Physics Letters, v22 n1 p56-59, 15 Sep 73.

Descriptors: *Microwaves, *Resonance, *Molecular states, Luminescence, Paramagnetism, Optical detection, Phosphorescence, Reprints.
Identifiers: *Excited states, Triplet states.

Optically detected electron double resonance studies of excited molecules have brought to light two new phenomena: multiple, interconverting types of paramagnetism and multiple, interconverting types of luminescence. The multiple properties are characteristics of a single molecular state. Their interconversion occurs freely at temperatures as low as 1.4K. (Author)

AD-A010 750/8GA PC$3.25/MF$2.25
Dayton Univ Ohio
Probable Observation of Unusual Local Vibrational Modes in the Oscillatory Photoconductivity of Semi-Insulating GaAs.
Journal Article,
H. J. Stocker. 20 Nov 74, 3p ARL-75-0107
Contract F33615-72-C-2114
Availability: Pub. in Solid State Communications, v16 p525-527 1975.

Descriptors: *Photoconductivity, *Semiconductors, Gallium arsenides, Oscillation, Vibration, Modes, Phonons, Energy, Reprints.

We have observed oscillatory photoconductivity with a period of 20.9 meV in semi-insulating GaAs at T = 18-23 K. These oscillations are associated with the 0.75 eV impurity level in GaAs which has often been attributed to 0. It is suggested that the oscillations are due to a cascade process involving multiple emission of a local vibrational mode, of energy 20.9 meV, associated with the 0.75 eV defect. (Author)

COM-75-10472-01/GA PC-Subscription
National Bureau of Standards, Boulder, Colo. Cryogenics Div.
Superconducting Devices and Materials. Issue No. 75-1, January-March 1975.
Quarterly literature survey.
1975, 96p*
Prepared in cooperation with Office of Naval Research, Arlington, Va.
Paper copy available $20.00/year.

Descriptors: *Superconductors, *Superconductivity, *Bibliographies, Reviews, Superconducting magnets, Materials.

A cooperative literature survey and review is presented listing publications and reports pertaining to superconducting devices and to theory and experiments related to superconducting devices.

20D. Fluid Mechanics

AD-A010 565/0GA PC$3.25/MF$2.25
California Univ Los Angeles
The Stability of the Laminar Free Convection Flow Induced by a Heated Inclined Plate,
P. A. Iyer, and R. E. Kelly. 5 May 72, 10p ARO-10112.1-E
Grants DA-ARO-D-31-124-72-G168, NSF-GA-31247
Summary in French, German and Russian.
Availability: Pub. in International Jnl. Heat Mass Transfer, v17 p517-525 1974.

Descriptors: *Laminar flow, *Laminar boundary layer, Convection, Vortices, Instability, Stability, Plates, Reprints.

Visual observations by Lloyd and Sparrow and Sparrow and Husar have indicated that the instability of the boundary layer on a heated, inclined plate is predominated by two-dimensional waves for angles of inclination less than 14 deg, whereas both waves and longitudinal vortices are observed for angles of 14 deg-17 deg, and vortices predominate for larger angles. A linear stability analysis is carried out in this paper. It is found that each mode becomes unstable first at the same location along the plate at an angle of only 4 deg. However, correlation with the experimental observations is achieved by calculating the total amplification of each disturbance from the predicted point of onset of instability to the point of observed instability for various angles of inclination. (Author)

AD-A010 566/8GA PC$3.25/MF$2.25
Cornell Univ Ithaca N Y Dept of Theoretical and Applied Mechanics
Rear Stagnation-Point Flow in a Rotating Fluid,
R. W. Davis, and G. S. S. Ludford. 11 Feb 74, 5p ARO-5329.57-M
Grants DA-ARO-D-31-124-71-G163, NSF-GP-40965
Availability: Pub. in Physics of Fluids, v17 n11 p1941-1944 Nov 74.

Descriptors: *Stagnation point, Fluid dynamics, Fluid flow, Rotation, Disks, Spinning(Motion), Boundary layer, Navier stokes equations, Reprints.

The exact solution found previously is applied to rear stagnation-point flow imposed on solid-

body rotation over a disk. Under normal circumstances, any radial flow reversal which occurs in the boundary layer is suppressed again by the spin up of the fluid outside. (Author)

AD-A010 580/9GA PC$3.75/MF$2.25
Purdue Univ Lafayette Ind Project Squid Headquarters
Analysis of Unsteady Transonic Channel Flow with Shock Waves.
Technical rept.,
G. K. Richey, and T. C. Adamson, Jr. May 75, 41p Rept no. SQUID-TR-MICH-14-PU
Contract N00014-67-A-0226-0005
Prepared in cooperation with Michigan Univ., Ann Arbor.

Descriptors: *Channel flow, *Transonic characteristics, *Shock waves, Nonuniform flow, Inviscid flow, Two dimensional flow, Mathematical models, Problem solving, Nozzle gas flow, Equations of motion, Walls.
Identifiers: *Unsteady flow, Squid project.

Inviscid unsteady transonic flow in a two-dimensional channel is analyzed using asymptotic techniques. The analysis includes the case where a shock wave is present in a channel having arbitrary wall shape, with artibrary small disturbances imposed at a given downstream location. Second-order solutions are not uniformly valid near the shock wave, since they do not satisfy the shock jump conditions. It is therefore necessary to obtain inner solutions which are matched asymptotically to those in the outer channel-flow region.

AD-A010 620/3GA PC$4.25/MF$2.25
Duvvuri Research Associates Chula Vista Calif
Analysis of Coanda Reattachment on Curved Surfaces.
Interim technical rept. no. 1, 21 May-21 Dec 73,
Tirumalesa Duvvuri, and Joel T. Park. Apr 75, 52p Rept no. DRA-TR-73-01 ARL-75-0101
Contract F33615-73-C-4120

Descriptors: *Flow separation, *Coanda effect, *Convex bodies, *Jet flow, Curved profiles, Short takeoff aircraft, Mathematical models, Equations of motion, Computer applications.
Identifiers: *Flow reattachment.

Current developments in powered-lift STOL aircraft has renewed interest in jet reattachment to adjacent surfaces, the phenomenon also known as the Coanda effect. The experiments and theories on this subject over the past decade have been reviewed. Since reattachment distance on a curved surface has been neither measured nor predicted, an analysis was developed for the prediction of reattachment distance with offset, radius, and ventilation flowrate as parameters. A pair of nonlinear equations have been solved on a computer with a minimization technique. Attachment distance as measured along the curved surface increases with offset, ventilation flowrate, and surface radius.

AD-A010 622/9GA PC$3.75/MF$2.25
Colorado State Univ Fort Collins
A Steady Two-Dimensional Incompressible Laminar Flow in a Circular Swirl Chamber.
Final rept. Sep 73-Apr 74,
Chen-Chi Hsu, and Anantha K. Rao. Apr 75, 33p ARL-75-0102
Contract F33615-72-C-1806
See also AD-659 743. Prepared in cooperation with Michigan Univ., Ann Arbor under Contract F33615-74-C-1116.

Descriptors: *Boundary layer flow, *Incompressible flow, Velocity, Two dimensional flow, Circular, Problem solving.
Identifiers: *Swirl flow, Velocity profiles, *Closed streamline flow.

A steady, two-dimensional, incompressible, laminar boundary layer flow in a circular swirl chamber with one half of the boundary stationary and the other half moving with a speed given by a cosine function of the angle in polar coordinates has been solved. The results obtained show that, as one moves away from the boundary, the velocity profile always overshoots the value of the external velocity and then oscillates about this value with an exponentially decaying amplitude. Moreover, they show that for a closed streamline flow problem a positive wall shear stress can occur at a boundary whose speed is larger than that of the external velocity, and vice versa.

AD-A010 635/1GA PC$3.25/MF$2.25
Cold Regions Research and Engineering Lab Hanover N H
Heat Transfer Characteristics of a Bubble-Induced Water Jet Impinging on an Ice Surface.
Research rept.,
Yin-Chao Yen. Apr 75, 23p Rept no. CRREL-RR-335

Descriptors: *Water jets, *Cold regions, *Navigational aids, *Ice penetration, Feasibility studies, Model tests, Deicing systems, Bubbles, Impingement, Heat transfer, Melting, Transport.
Identifiers: Bubble dynamics, Warm subsurface water.

Winter freezing temperatures have posed many problems in certain regions for navigation, and for maintenance of structures in water. During long, cold winters many lakes, harbors, ports and rivers become covered with ice, greatly shortening the navigation period. In attempts to solve this problem, air-bubbler devices have been developed which operate on the principle that warm subsurface water can be brought to the surface by a stream of air bubbles rising through the otherwise quiescent bodies of water. The first air bubbler system was installed in 1917 at the Keokuk Dam, and since that time a number of similar usages have been reported. To the best of the author's knowledge, no prior laboratory work has been done regarding the heat transfer characteristics of a bubble-driven jet impinging on an ice surface. This work is also considered to be useful in destratifying lakes and artificial water reservoirs for control and upgrading of our water resources. The present study investigated the problem experimentally. The effects of column height, diameter and air bubbling rate on the rate of heat transfer were determined.

AD-A010 654/2GA PC$3.75/MF$2.25
Ballistic Research Labs Aberdeen Proving Ground Md
A Nonsimilar Moving Wall Boundary Layer Problem.
Final rept.,
James E. Danberg, and Kevin S. Fansler. May 75, 30p Rept no. BRL-1785

Descriptors: *Laminar boundary layer, *Boundary layer flow, *Walls, Motion, Stagnation point, Mathematical models, Velocity, Problem solving, Numerical methods and procedures, Equations of motion.
Identifiers: Moving walls.

The nonsimilar moving wall stagnation point solution derived by Rott has been redefined so as to show that a second related solution exists. Rott's solution corresponds to a constant wall velocity with an external velocity proportional to the distance from the stagnation point. A counterpart solution corresponds to the case of a constant edge velocity proportional to the wall coordinate. Numerical and analytical solutions of the equations have defined the characteristics of the boundary layer including their integral properties.

AD-A010 693/0GA PC$3.25/MF$2.25
Johns Hopkins Univ Baltimore Md Dept of Mechanics and Materials Science
Observation of Cellular Patterns in a Partly Filled, Horizontal, Rotating Cylinder,
M. J. Karweit, and S. Corrsin. 25 Jul 74, 3p
Contract N00014-67-A-0163-0005
Availability: Pub. in Physics of Fluids, v18 n1 p111-112 Jan 75.

Descriptors: *Fluid flow, Hydrodynamics, Rotation, Cell wall, Cylindrical bodies, Instability, Liquids, Hydrodynamic configurations, Patterns, Reprints.

The liquid in a partly filled, horizontal, rotating circular cylinder displays at least three different types of periodic, cellular motion. Two of these, which have apparently not heretofore been presented, are described. (Author)

AD-A010 749/0GA PC$4.25/MF$2.25
New York Univ N Y Courant Inst of Mathematical Sciences
On the Laws of Relativistic Electro-Magneto-Fluid Dynamics,
K. O. Friedrichs. Jun 74, 60p
Contracts AF 49(638)-1719, AT(11-1)-3077
Availability: Pub. in Communications on Pure and Applied Mathematics, v27 p749-808 1974.

Descriptors: *Electrodynamics, *Fluid dynamics, *Differential equations, Electromagnetic fields, Electric fields, Magnetic fields, Polarization, Reprints.
Identifiers: *Magneto fluid dynamics.

The present paper is concerned with the question of what kind of differential equations are suitable to represent laws of physics. This is the question raised by Hadamard, who pointed out that, on purely mathematical grounds, problems of motion cannot be formulated in terms of elliptic equations and problems of equilibrium cannot be formulated in terms of hyperbolic ones. We shall be concerned here with equations that may govern problems of motion; but we shall require more than that the initial problem be well posed. We shall require of our equations that their solutions' dependence on the data is sensitive to disturbances of only a finite order in a sense to be explained later on. It turns out that the basic laws of mechanics and electrodynamics can be represented by systems of convexly dependent conservation equations of first order. Laws of physics which are derived from more basic ones with the aid of simplifying assumptions can often also be represented by convexly dependent conservation equations. But this is not always so. In general, though, the conservation character will be retained in such a simplification process, but the convexity property may get lost. It that happens one should be very much aware of the likelihood that solutions exist only for infinitely differentiable data and depend on these data with a sensitivity of infinite order.

AD-A010 793/8GA PC$3.75/MF$2.25
Naval Surface Weapons Center White Oak Lab Silver Spring Md
An Integral Approach to Transient Heat-Conduction Problems with Phase Transition,
Tse-Fou Zien. 12 Mar 75, 44p Rept no. NSWC/WOL/TR-75-37

Descriptors: *Boundary layer flow, *Aerodynamic heating, *Conduction(Heat transfer), Skin friction, Ablation, Partial differential equations, Numerical integration.

An approximate method for studying transient heat-conduction problems is presented. Its application to various linear problems and nonlinear problems involving phase transitions is described by means of several idealized problems. The method is basically a refined ver-

sion of the well-known Karman-Pohlhausen integral technique in boundary-layer theory, and represents a further development of the basic ideas previously exploited to calculate skin friction and heat transfer in boundary-layer flows. The approximate solutions obtained are extensively compared with existing exact solutions and those of the classical Karman-Pohlhausen method. From the simplicity and accuracy of the present method as demonstrated in the results, the potential utility of the method in providing simple, engineering solutions to complex aerodynamic heating problems can be inferred.

AD-A010 846/4GA PC$3.25/MF$2.25
California Inst of Tech Pasadena
Turbulent Boundary Layers with Assigned Wall Shear,
Tuncer Cebeci, N. Berkant, I. Silivri, and Herbert B. Keller. 10 Jan 74, 14p ARO-7625.35-M
Contract DAHC04-68-C-0006, Grant NSF-GK-30981
Availability: Pub. in Computers and Fluids, v3 p37-49 1975.

Descriptors: *Turbulent boundary layer, Differential equations, Incompressible flow, Laminar boundary layer, Velocity, Boundary value problems, Two dimensional, Reprints.

This paper considers the problem of computing the external velocity distribution on a two-dimensional body in an incompressible boundary-layer flow for a specified wall shear. This leads to an 'overdetermined' boundary-value problem for a partial differential equation containing the edge velocity as an unknown parameter. A numerical procedure for determining the external velocity is given, together with several examples for laminar and turbulent boundary layers.

AD-A010 861/3GA PC$3.25/MF$2.25
Ohio State Univ Research Foundation Columbus
Asymptotic Theory of Separation and Reattachment of a Laminar Boundary Layer on a Compression Ramp.
Technical rept.,
O. R. Burggraf. May 75, 12p Rept no. OSURF-3308-3
Contract N00014-67-A-0232-0014
Presented at the Symposium on 'Flow Separation' sponsored by the AGARD Fluid Dynamics Panel, 27-30 May 75, Gottingen, Germany.

Descriptors: *Flow separation, *Laminar boundary layer, *Supersonic characteristics, Ramps, Compressive properties, Mathematical models, Equations of motion, Theory.
Identifiers: *Flow reattachment, Compression ramps.

Laminar boundary layer separation and reattachment are considered for adiabatic flow over a compression ramp with a supersonic mainstream. For a large ramp angle, calculations based on the Stewartson-Williams triple-deck theory show that the regions of separation and reattachment become distinct, with an intervening plateau region of nearly constant pressure. The mathematical description of each of these distinct regions is given, and simple formulas derived for a number of quantities of interest, including the plateau pressure, conditions at separation and reattachment, and the geometry of the separated region. The theory should provide a useful tool for engineering analysis.

AD-A010 947/0GA PC$3.25/MF$2.25
New York Univ N Y Courant Inst of Mathematical Sciences
Ray Method for Surface Waves on Fluid of Variable Depth,
M. C. Shen. 25 Feb 74, 21p Rept no. SI-13
Contract N00014-67-A-0467-0027, Grant NSF-GP-28699
Availability: Pub. in SIAM review, v17 n1 p38-56 Jan 75.

Descriptors: *Surface waves, *Wave propagation, Velocity, Ocean bottom topography, Asymptotic series, Harmonic analysis, Two dimensional flow, Equations, Reprints.
Identifiers: Linear ray method, Nonlinear ray method, Geometrical optics method.

This paper reports some recent developments in ray method for surface waves on fluid of variable depth. The linear ray method, which fails at a shoreline and a caustic, is improved be means of uniform asymptotic expansions. In the nonlinear ray method, an equation of the Korteweg-DeVries type is derived along a ray for fluid domains slowly varying in two directions and one direction. (Author)

AD-A010 949/6GA PC$3.25/MF$2.25
Massachusetts Inst of Tech Cambridge
Effects of Entrance Loss on Harbor Oscillations,
Umit Unluata, and Chiang C. Mei. 1974, 20p
Contract N00014-67-A-0204-0036
Availability: Pub. in Jnl. of the Waterways Harbors and Coastal Engineering Division, Proceedings of the ASCE, v101 nWW2 p161-180 May 75.

Descriptors: *Ocean currents, *Oscillation, *Harbors, Openings, Turbulence, Walls, Breakwaters, Harmonic analysis, Friction, Losses, Reprints.

By assuming a head loss across the harbor entrance the wave-induced response in a rectangular model harbor is studied theoretically. The loss is assumed to be quadratic in local velocity with a constant friction coefficient. Bottom and side-wall dissipation are not considered. It is shown that odd higher harmonics are present. The resonance characteristics of the fundamental harmonic response in the harbor are significantly influenced by the additional damping due to friction, especially for the lowest peaks. While in the perfect fluid theory these peaks heighten with diminishing entrance width, in the presence of friction the opposite is true for sufficiently narrow mouth. (Author)

AD-A011 079/1GA PC$3.75/MF$2.25
Colorado State Univ Fort Collins Dept of Mechanical Engineering
Double-Diffusive Convective Instability in a Horizontal Fluid Layer.
Technical rept.,
Richard I. Loehrke, and John H. Wright. Feb 75, 29p Rept no. TR-4
Contract N00014-67-A-0299-0009
Report on Thermohaline Convection Project.

Descriptors: *Hydrodynamics, *Convection(Heat transfer), Heat, Salt water, Layers, Fresh water, Diffusion, Stability, Porous materials, Metal plates, Concentration(Chemistry), Test methods, Theory, Test equipment, Buoyancy, Sodium chloride.
Identifiers: *Thermohaline diffusion, *Double diffusive stability.

The convective stability of a horizontal layer of water with salt and heat addition from below was studied experimentally. The layer was bounded above and below by porous metal plates through which both heat and salt could diffuse. A well-mixed region of warm, salty water below the lower plate and another of cooler, fresher water above the upper plate set the temperature and concentration differences for the intervening quiescent layer. With a fixed, constant concentration gradient established between the plates the temperature difference was slowly increased until convective motions were observed. The stability boundary for this system lies within the unstable region predicted by linear theory for a horizontal layer with constant gradients and stress-free boundaries and approaches the linear boundary at high Rayleigh numbers.

AD-A011 080/9GA PC$3.75/MF$2.25
Colorado State Univ Fort Collins Dept of Mechanical Engineering
Heat and Mass Transfer in Layered Natural Convection.
Technical rept.,
Thomas R. Mancini, Richard I. Loehrke, and Robert D. Haberstroh. Mar 75, 28p Rept no. TR-5
Contract N00014-67-A-0299-0009
Report as Thermohaline Convection Project.

Descriptors: *Hydrodynamics, *Convection(Heat transfer), *Mass transfer, Sodium chloride, Layers, Diffusion, Solutions(Mixtures), Gradients, Heat, Water, Mathematical models, Experimental data, Circulation.
Identifiers: *Thermohaline circulation, Double diffusion, Stratified flow, Nonconvecting interfaces.

In a double-diffusive system (for example, heat and salt diffusing upward through water) a layered structure may form. This structure consists of horizontal convecting layers separated by non-convecting interfaces. The transport of heat and salt through a two-layer system can be calculated on the basis of a simple, mechanistic model described in this paper. The model predicts behavior which is consistent with results of a series of thermohaline convection experiments. The extension of these results to systems with greater numbers of layers is discussed.

AD-A011 086/6GA PC$3.75/MF$2.25
Naval Postgraduate School Monterey Calif
An Exact Solution to the Transonic Equation,
Oscar Biblarz. Apr 75, 26p Rept no. NPS-57Zi75041
Errata sheet inserted.

Descriptors: *Transonic flow, *Equations of motion, Numerical integration, Perturbation theory, Nonlinear differential equations, Velocity, Numerical methods and procedures, Flow.
Identifiers: Intrinsic flows.

The small disturbance equation of transonic flow is solved by a separation of variables technique. The resulting ordinary, nonlinear differential equations are studied in the phase plane where the general solution represents the behavior of the perturbation velocities. In the phase plane, the character of transonic flow is evident. An asymptotic explicit solution is given which encompasses the sonic flow solution. Numerical integration results for the implicit equations are presented and two flows are examined which are intrinsic to the form of the solution.

AD-A011 091/6GA PC$3.25/MF$2.25
Pennsylvania State Univ University Park Applied Research Lab
Time Scale and Molecular Weight Distribution Contributions to Dilute Polymer Solution Fluid Mechanics.
Technical memo.,
Neil S. Berman, and William K. George. 19 Feb 74, 21p Rept no. TM-74-34
Contract N00017-73-C-1418

Descriptors: *Fluid mechanics, *Polymers, *Solutions(Mixtures), *Drag reduction, Fluid flow, Pitot tubes, Pipes, Degradation, Mathematical models, Viscosity, Layers, Molecular weight, Time dependence.

Experimental results on drag reduction in pipe flow, pitot tube errors and polymer degradation are presented to support a thickened sublayer model for dilute polymer solutions. The proposed model exhibits onset when the flow time scale equals the polymer time scale and increased drag reduction, degradation or pitot tube error as increased fractions of the polymers in the distribution are stretched by the flow. Eventually a limit is reached when the measure of increased sublayer thickness or increased effective viscosity in a pipe flow core reaches a limit due to entanglement of stretched molecules. The model correlates well with the experimental data.

AGC-2482 PC$7.50/MF$2.25
Aerojet-General Corp., Azusa, Calif.
Fanno Line Tables (One-Dimensional Steady Adiabatic Flow of a Compressible Fluid in a Constant-Area Duct with Friction) gamma--1.380.
8 Feb 63, 87p

Descriptors: (*Compressible flow, *Data compilation), Ducts, Subsonic flow, Supersonic flow, Tables, Transonic flow.

For abstract, see NSA 31 12, number 32957.

AGC-2483 PC$7.50/MF$2.25
Aerojet-General Corp., Azusa, Calif.
Rayleigh Line Tables (One-Dimensional Steady Frictionless Flow of a Compressible Fluid in a Constant-Area Duct with Heat-Transfer) gamma--1.380.
8 Feb 63, 87p

Descriptors: (*Compressible flow, *Data compilation), Critical flow, Ducts, Flow models, Heat transfer, Subsonic flow, Supersonic flow, Tables, Transonic flow.

For abstract, see NSA 31 12, number 32958.

COM-75-10730/0GA PC$3.75/MF$2.25
Massachusetts Inst. of Tech., Cambridge. Dept. of Mathematics.
Stability and Nonlinear Waves in Stratified Shear Flows.
Final rept.,
D. J. Benney, and S. A. Maslowe. 1975, 39p
NOAA-75050905
Grant NOAA-N22-229-72(G)

Descriptors: *Shear flow, *Fluid dynamics, Stability, Nonlinear systems, Theories, Equations of motion, Time dependence, Perturbation, Oceanography, Turbulence.
Identifiers: Instability, Stratified flow, Swirl flow.

The report presents the results of a study initiated in 1972 to investigate nonlinear aspects of shear flow instability. The following three specific developments were accomplished and are described: (1) formulation of a weakly nonlinear stability theory for stratified shear flows and derivation of the nonlinear amplitude equation; (2) development of a time-dependent nonlinear critical layer theory for homogeneous shear flows; and (3) a study of the linear instability of swirling flows to non-axisymmetric perturbations.

COO-2152-15 PC$9.25/MF$2.25
Cincinnati Univ., Ohio.
Two Phase Pressure Drop Across Abrupt Area Changes.
A. Husain, and J. Weisman. Jan 75, 123p
Contract AT-11-1-2152

Descriptors: (*Two-phase flow, *Pressure gradients), (*Freons, Two-phase flow).

For abstract, see NSA 31 12, number 32959.

NTIS/PS-75/497/8GA
PC$25.00/MF$25.00
National Technical Information Service, Springfield, Va.
Drag Reducing Fluids (A Bibliography with Abstracts).
Rept. for 1969-Jun 75,
Edward J. Lehmann, and Gerald H. Adams. Jun 75, 163p*
Supersedes COM-73-11674 and NTIS/PS-74/109.

Descriptors: *Bibliographies, *Drag, *Marine engineering, Hydrodynamics, Theory, Elastic deformation, Mathematical models, Viscosity, Boundary layer, Polymers, Ship hulls, Injuction, Pipe flow, Model tests, Antifriction bearings, Surface properties, Water flow, Turbulence, Thermodynamic properties, Shear properties, Aerodynamic drag.
Identifiers: *Drag reduction, *Nonnewtonian fluids, *Drag reducing fluids, Elastohydrodynamics.

The bibliography covers research on drag reducing and non-newtonian fluids along with some studies on elastohydrodynamics. Included are theory, chemical formulations, test procedures, and applications. (Contains 158 abstracts).

N75-21291/0GA PC$3.75/MF$2.25
Kanner (Leo) Associates, Redwood City, Calif.
Studies Relative to an Induction Pressurized Transonic Wind Tunnel. A: Air Pump Performance; Circuit Losses.
C. Quemard, A. Mignosi, and A. Seraudie. Mar 75, 33p NASA-TT-F-16187
Contract NASW-2481
Tran-Transl. Into English of the Book "Etudes Relatives a Une Soufflerie Transsonique Pressurisee a Induction. A: Performances des Trompes; Pertes du Circuit" Toulouse, Onera, Jul. 1974 28 p.

Descriptors: *Jet pumps, *Transonic wind tunnels, Air flow, Injection, Performance tests, Test equipment, Test facilities.

For abstract, see STAR 1313

N75-21294/4GA PC$4.75/MF$2.25
National Aeronautics and Space Administration. Langley Research Center, Langley Station, Va.
Effect of Rod GAP Spacing on a Suction Panel for Laminar Flow and Noise Control in Supersonic Wind Tunnels.
M.S. Thesis - Old Dominion Univ.
W. D. Harvey. May 75, 69p NASA-TM-X-68718

Descriptors: *Laminar flow, *Noise reduction, *Supersonic wind tunnels, Aerodynamic noise, Heat transfer, Sound propagation, Turbulent boundary layer.

For abstract, see STAR 1313

N75-21296/9GA PC$3.25/MF$2.25
Aeronautical Research Labs., Melbourne (Australia).
The Solid Blockage of a Three-Dimensional Model for Ground Effect Experiments in a Closed Rectangular Wind Tunnel.
B. W. B. Shaw. Aug 74, 18p ARL/A-NOTE-348

Descriptors: *Blocking, *Ground effect, *Wind tunnels, Digital computers, Wind tunnel models.

For abstract, see STAR 1313

N75-21554/1GA PC$4.25/MF$2.25
National Aeronautics and Space Administration. Ames Research Center, Moffett Field, Calif.
An Experimental Documentation of a Hypersonic Shock-Wave Turbulent Boundary Layer Interaction Flow: With and Without Separation.
M. I. Kussoy, and C. C. Horstmann. Feb 75, 67p NASA-TM-X-62412, A-5910

Descriptors: *Flow characteristics, *Hypersonic boundary layer, *Separated flow, *Shock waves, *Turbulent boundary layer, Boundary layer separation, Density distribution, Static pressure, Tables (Data), Temperature profiles, Velocity distribution.

For abstract, see STAR 1313

N75-21557/4GA PC$3.25/MF$2.25
Kanner (Leo) Associates, Redwood City, Calif.
Difference Schemes of Improved Accuracy for the Numerical Solution of Some Problems in Aerodynamics.
A. I. Tolstykh. Mar 75, 16p NASA-TT-F-16181
Contract NASW-2481
Tran-Transl. Into English from Uch. Zap. (Ussr), V. 4, No. 2, 1973 p 36-44.

Descriptors: *Aerodynamics, *Difference equations, *Flow equations, Blunt bodies, Compressible flow, Gas flow, Shock waves.

For abstract, see STAR 1313

N75-21558/2GA PC$3.25/MF$2.25
Kanner (Leo) Associates, Redwood City, Calif.
An Explicit Finite-Difference Scheme for Solving the Problems of Flows past Bodies by the Finite Difference Method.
A. N. Minaylos. Mar 75, 13p NASA-TT-F-16193
Contract NASW-2481
Tran-Transl. Into English from Uch. Zap. Tsagi (Ussr), V. 3, No. 6, 1972 p 119-124.

Descriptors: *Finite difference theory, *Flow distribution, Bodies of revolution, Flow velocity, Fluid dynamics, Gas viscosity, Nodes (Standing waves), Spheres, Two dimensional flow.

For abstract, see STAR 1313

N75-21564/0GA PC$3.25/MF$2.25
National Aeronautics and Space Administration. Lewis Research Center, Cleveland, Ohio.
Turbulence Processes and Simple Closure Schemes.
R. G. Deissler. 1975, 23p NASA-TM-X-71703, E-8312
Conf-Presented at Fundamentals and Appl. Of Turbulence Lecture, Tullahoma, Tenn., 21-25 Apr. 1975.

Descriptors: *Closure law, *Turbulent flow, Mixing length flow theory, Pipe flow, Shear flow, Uniform flow.

For abstract, see STAR 1313

N75-21565/7GA PC$8.75/MF$2.25
National Aeronautics and Space Administration. Langley Research Center, Langley Station, Va.
Program and Charts for Determining Shock Tube, and Expansion Tunnel Flow Quantities for Real Air.
C. G. Miller, Iii, and S. E. Wilder. Feb 75, 280p
NASA-TN-D-7752, L-9700

Descriptors: *Air flow, *Computer programs, *Flow chambers, *Shock tubes, Fortran, Frozen equilibrium flow, Real gases, Reflected waves, Thermodynamic properties, Unsteady flow.

For abstract, see STAR 1313

N75-21566/5GA PC$4.25/MF$2.25
Acurex Corp., Mountain View, Calif. Aerotherm Div.

Rapid Methods for Calculating Radiation Transport in the Entry Environment.
Final Report.
W. E. Nicolet. Apr 75, 58p NASA-CR-2528
Contract NAS1-12160

Descriptors: *Aerodynamic heating, *Atmospheric entry, *Radiative heat transfer, Aerodynamics, Approximation, Flow distribution, Flow equations, Numerical analysis.

For abstract, see STAR 1313

N75-21567/3GA PC$4.25/MF$2.25
Illinois Univ., Urbana.
Nozzle Free Jet Flows within the Strong Curved Shock Regime.
Ph.D. Thesis.
T. S. Shih. 1975, 72p NASA-CR-142675
Contract NGL-14-005-140

Descriptors: *Convergent-divergent nozzles, *Free jets, *Jet flow, *Shock loads, Axial flow, Flow distribution, Graphs (Charts), Two dimensional flow, Velocity distribution.

For abstract, see STAR 1313

N75-21987/3GA PC$7.00/MF$2.25
Virginia Poiytechnic Inst. and State Univ., Blacksburg. Dept. of Aerospace Engineering.
A Computer Program for Two-Dimensional and Axisymmetric Nonreacting Perfect Gas and Equilibrium Chemically Reacting Laminar, Transitional and-or Turbulent Boundary Layer Flows.
E. W. Miner, E. C. Anderson, and C. H. Lewis.
May 71, 191p NASA-CR-132601, VPI-E-71-8
Contract NAS1-9337

Descriptors: *Axisymmetric flow, *Computer programs, *Ideal gas, *Laminar boundary layer, *Turbulent boundary layer, *Two dimensional flow, Chemical equilibrium, Finite difference theory, Fortran, Rocket nozzles, Wind tunnel nozzles.

For abstract, see STAR 1313

PB-241 986/9GA PC$3.25/MF$2.25
Michigan Univ., Ann Arbor. Dept. of Mechanical Engineering.
Effects of Entrained Particle Spectra on Bubble Nucleation.
Technical rept.,
F. G. Hammitt. May 75, 25p UMICH-012449-7-T
Grant NSF-GK-40130
See also PB-239 297.

Descriptors: *Cavitation, *Bubbles, *Ultrasonic radiation, Entrainment, Nucleation, Fast neutrons, Horns, Water, Nucleate boiling, Particles, Mathematical prediction, Spectra.
Identifiers: Microbubbles, Nuclei spectra, Liquid sodium.

Results from three separate research investigations using an ultrasonic vibratory horn cavitation facility with both water and sodium as test liquids in the laboratory are compared. In the water tests, micro-particle population and size distributions are measured, using both Coulter Counter and light-scattering systems. The particle size distribution for the sodium tests is inferred from the threshold measurements. Inception and desinence thresholds are measured for most cases. The effects of fast neutron irradiation and also a transverse magnetic field tesla are observed, including the effect of the magnetic field on cavitation damage.

WANL-TMI-1108 PC$4.00/MF$2.25
Westinghouse Electric Corp., Pittsburgh, Pa. Astronuclear Lab.
Finite Differencing of Compressible Flow Equations by the Lax--Wendroff Four Point Method.
22 May 64, 17p

Descriptors: (*Compressible flow, *Analytical solution), Differential equations, Finite difference method, Gas flow.

For abstract, see NSA 31 12, number 32960.

WANL-TMI-1670 PC$4.25/MF$2.25
Westinghouse Electric Corp., Pittsburgh, Pa. Astronuclear Lab.
Orifice Plate Flow Nomographs.
W. C. Chronis. May 66, 21p

Descriptors: (*Orifices, *Calibration), (*Nerva reactor, *Gas flow), Flow rate, Nomograms.

For abstract, see NSA 31 12, number 32961.

20E. Masers and Lasers

AD-A010 558/5GA PC$5.75/MF$2.25
Informatics Inc Rockville Md
Bibliography of Soviet Laser Developments, No. 18, October - December 1974,
Stuart G. Hibben. 25 Apr 75, 126p
Contract N00600-75-C-0018, DARPA Order-2790
See also report dated Sep 74, AD-A005 566.

Descriptors: *Lasers, *Bibliographies, *USSR, Gas lasers, Semiconductor lasers, Infrared lasers, Solid state lasers, Liquid lasers, Chemical lasers, Dye lasers, Laser materials, Pulsed lasers, Crystal growth, Optical equipment components, Pulse generators, Radiation effects, Ultraviolet lasers, Laser hazards, Laser communications, Test equipment, Data processing, Holography, Plasma generators.
Identifiers: Organic dye lasers, Nonlinear optics, Laser radiobiology, Gamma ray lasers.

This is the Soviet Laser Bibliography for the fourth quarter of 1974 and is No. 18 in the series on Soviet laser developments. The coverage includes basic research on solid state, liquid, gas, and chemical lasers; components; nonlinear optics; spectroscopy of laser materials; ultrashort pulse generation; crystal growing; theoretical aspects of advanced lasers; and general laser theory. Laser applications are listed under biological effects; communications; computer technology; holography; laser-induced chemical reactions; instrumentation and measurements; beam-target interaction; and plasma generation and diagnostics.

AD-A010 582/5GA PC$3.25/MF$2.25
Washington Univ Seattle Aerospace Research Lab
New Infrared Laser Concepts.
Semiannual technical rept. 1 Oct 74-31 Mar 75,
Walter H. Christiansen. 14 May 75, 8p
Contract N00014-75-C-0316, ARPA Order-2840

Descriptors: *Infrared lasers, Electron beams, Excitation, Particle collisions, Gain, Energy transfer, Hydrogen, Molecular vibration, Hydrogen chloride, Deuterium compounds, Scientific research.
Identifiers: *Hydrogen lasers, Dissociative recombination, *Hydrogen chloride lasers, Deuterium chloride lasers.

Infrared laser concepts that have high efficiency or high power applications are being studied. As part of this interest, the possibilities of lasing homonuclear molecules such as H2 or N2 directly without the use of permanent dipole additives have been analyzed. Basically the idea is to produce an inversion in a gas by a high-pressure e-beam-stabilized electric discharge and then induce radiative transitions via collision partners or electric fields. In H2, gain has been predicted over a bandwidth extending from 2.7 micrometers to 10 micrometers using the principle of collisionally induced dipole. In the search for new lasers having the possibility of increased efficiency, the N2-DCl and D2-HCl molecular systems have also been analyzed as examples of possible v-v transfer lasers. Experimental aparatus in the form of a low pressure mixing laser setup was built and used as a means for preliminary study.

AD-A010 618/7GA PC$3.75/MF$2.25
Aerospace Research Labs Wright-Patterson AFB Ohio
Preliminary Study on the Use of Ceramic Nozzle Arrays in Gas Dynamic Lasers.
Final rept. 1 Jan-1 Dec 74,
Loren A. Jacobson, and James E. Drewry. Apr 75, 37p Rept no. ARL-75-0100

Descriptors: *Gas dynamic lasers, *Supersonic nozzles, *Silicon nitrides, Supersonic flow, Ceramic materials, Laser cavities, Molecular vibration, Nitrogen, High temperature, Performance(Engineering).

One of the more difficult and costly problem areas in the development of high energy gas dynamic lasers (GDL) has been the nozzle array which is used to achieve 'freezing' of the vibrational energy mode via rapid expansion of nitrogen from high temperature plenum conditions. A model gas dynamic laser nozzle array fabricated from hot-pressed silicon nitride components has been successfully tested under thermal cycling air flow conditions to temperatures of 1150K. Excellent dimensional stability was shown by the center nozzle of the three nozzle assembly, and post-test examination of the components revealed no degradation of the materials. These findings suggest that ceramic materials offer important benefits to GDL systems.

AD-A010 619/5GA PC$3.25/MF$2.25
Aerospace Research Labs Wright-Patterson AFB Ohio
The Use of Shaped Cavities to Improve the Sidewall Boundary Layer Quality in Gas Dynamic Lasers.
Interim rept.,
James S. Petty, James R. Cooper, and Robert H. Korkegi. Mar 75, 17p Rept no. ARL-75-0024

Descriptors: *Laser cavities, *Gas dynamic lasers, *Supersonic flow, *Flow fields, Turbulent boundary layer, Flow visualization, Injection lasers, Supersonic wind tunnels, Holography, Interferometry, Reynolds number, Pressure, Velocity, Gas dynamics.
Identifiers: Interferometric holography.

A series of cavity shapes was tested on the sidewall of a Mach 3 high Reynolds number wind tunnel to determine the effects of the cavity and its downstream lip shape on the external flow. Various mass injection rates into the cavity were provided. Holographic interferommetry, oil flow, and a fast response surface pressure transducer were used to take data. Results indicate that a rectangular cavity with a lip shaped as a short rounded overhang least disturbs the turbulent boundary layer. Low levels of mass injection were found to have little effect on boundary layer quality.

AD-A010 621/1GA PC$3.25/MF$2.25
Dayton Univ Ohio
A Study of Diagnostic Systems for High Power Infrared Lasers.
Interim rept. Jun-Dec 72,
H. J. Stocker. Mar 75, 19p ARL-75-0026
Contract F33615-72-C-2114

Descriptors: *Carbon dioxide lasers, *Infrared lasers, *Test equipment, Optical instruments, Detectors, Gas lasers, Coherent radiation,

Laser beams, Instrumentation, High energy, Data processing, Display systems, Digital systems, Tape recorders, Liquid crystals, Minicomputers.
Identifiers: Pyroelectric detectors, Laser outputs, Liquid crystal display systems.

The problem of recording and displaying the spatial and temporal intensity distribution of high power carbon dioxide lasers is analysed in terms of information rate, spatial resolution, frame rate, dynamic range and contrast ratio. State-of-the-art infrared detectors, state-of-the-art data processing and data displaying systems as well as possible future technologies are examined as to availability, cost and reliability. The study concludes that an approach using a linear array of pyroelectric detectors, a digital tape recorder, a minicomputer and an CRT display comes close to fulfilling present requirements. Recommendations regarding medium-term research in this area are made.

AD-A010 678/1GA PC$3.25/MF$2.25
Columbia Radiation Lab New York
Hyperfine-Structure Investigation of Highly Excited D2 Levels in Rb87 and Cs133 using a CW Tunable Dye Laser in a Two-Step Excitation Scheme,
S. Svanberg, and P. Tsekeris. 12 Dec 74, 13p
Contract DAAB07-69-C-0383; Grant AF-AFOSR-2180-72
Availability: Pub. in Physical Review A, v11 n4 p1125-1137 Apr 75.

Descriptors: *Dye lasers, *Alkali metals, *Hyperfine structure, Excitation, Cesium, Resonance, Rubidium, Atomic energy levels, Electrons, Reprints, Atoms, Scattering, Magnetic dipoles.
Identifiers: Optical double resonance.

The alkali-metal atoms have a particularly simple electronic structure and a very detailed theoretical understanding of their properties could perhaps be expected. An atom with a single electron moving in the combined potential from the nucleus and a core of closed electron shells is certainly well understood and an accurate diagram of electronic energy levels can be constructed without too much effort. The spin dependence of the exchange forces between the valence electron and the individual core electrons can, however, give rise to an imbalance (polarization) in the closed electron shells, which can be interpreted in terms of excitation of core electrons to outer orbits. Whereas such core excitations have a minor effect on the gross features in the energy-level diagram, such atomic parameters as fine- and hyperfine-structure coupling constants can be appreciably affected. The breakdown of a pure one-electron description of the alkali atom is evident from a study of the fine-structure intervals for D and F doublets. Many of these doublets are anomalously narrow or even inverted. Investigations of the hyperfine structure (hfs) of excited states in alkali atoms are of great interest not only from the point of view of an understanding of the basic atomic interactions, but also for the determination of nuclear moments.

AD-A010 763/1GA PC$3.25/MF$2.25
Massachusetts Inst of Tech Cambridge
Frequency Stabilization of a CW Dye Laser,
R. E. Grove, F. Y. Wu, and S. Ezekiel. 1974, 5p
Availability: Pub. in Proceedings of the Society of Photo-Optical Instrumentation Engineers, v49 p75-79 1975.

Descriptors: *Dye lasers, *Molecular beams, *Mode locked lasers, Continuous wave lasers, Laser beams, Coupling(Interaction), Diatomic molecules, Hyperfine structure, High resolution, Iodine, Frequency stabilizers, Frequency standards, Reprints.

In order to perform ultrahigh-resolution spectroscopy, a tunable laser with a narrow spectral width is required. In this paper a single-frequency jet stream cw dye laser is described that is carefully designed to minimize high-frequency laser jitter. The residual low-frequency jitter is reduced to 200 kHz rms by locking the laser frequency to an external reference cavity. The stability of the laser has been verified by observing extremely narrow resonances (700 kHz FWHM) in an iodine molecular beam. The laser frequency can be linearly and smoothly tuned by varying the length of the external cavity. In certain precision spectroscopic applications long-term laser stabilization is needed for the generation of secondary wavelength standards throughout the visible region.

AD-A010 847/2GA PC$3.25/MF$2.25
Massachusetts Inst of Tech Cambridge Research Lab of Electronics
Gain Spectrum of a High-Pressure CO2 Laser,
J. L. Miller, A. H. M. Ross, and E. V. George. 20 Dec 74, 4p
Contract DAAB07-74-C-0630
Availability: Pub. in Applied Physics Letters, v26 n9 p523-526, 1 May 75.

Descriptors: *Carbon dioxide lasers, High gain, Pulse generators, Infrared pulses, Pressure, Amplifiers, Reprints.

AD-A010 963/7GA PC$4.75/MF$2.25
Rand Corp Santa Monica Calif
A Quantitative Theory of Noble Gas Ion Laser Discharge: Argon Ion Laser,
C. C. Chen. Jan 75, 90p Rept no. P-5350

Descriptors: *Gas discharges, *Gas lasers, Ions, Argon, Plasmas(Physics), Temperature, Excitation, Particle collisions, Gain, Performance(Engineering), Electron energy.
Identifiers: *Argon ion lasers, Population inversion(Energy levels).

Using the three temperature plasma formulation derived in an earlier paper, the authors have obtained numerical results for argon ion laser discharge parameter as functions of jR (the product of current density j and tube radius R) for selected values of pR (the product of the total filling pressure p and tube radius) at a fixed value of Tw (the tube wall temperature). The calculated electron temperature is found to be in good agreement with available experimental data. Calculations of the collisional excitation-rate-limited power output per unit length have been made for continuous wave (CW) argon ion lasers. It is found that the two-step excitation rate is quite adequate in explaining the experimentally observed argon ion laser output power per unit length.

COM-75-50312/8GA Not available NTIS
National Bureau of Standards, Washington, D.C.
Precision Beam Splitters for CO2 Lasers.
Final rept.,
Douglas L. Franzen. Mar 75, 6p
Pub. in Applied Optics, v14 n3 p647-652 Mar 75.

Descriptors: *Carbon dioxide lasers, *Infrared optical materials, *Optical equipment, Infrared lasers, Semiconductors, Gallium arsenides, Cadmium tellurides, Zinc selenides, Potassium chloride, Power.
Identifiers: *Beam splitters, Reprints.

Beam splitters for 10 micrometer lasers are discussed and then applied to the precision measurement of high average powers. In particular, beam splitter stability has been investigated in various materials over the 20-600-W power range with power densities up to 1 kW/sq cm. The absolute beam splitter ratios are given along with the achieved measurement precisions. The semiconductors investigated were GaAs, CdTe, and ZnSe in addition to one alkali-halide KCl. Standard deviations for the beam splitter ratios of 1% over the power range were typical. Absolute ratios agree with the predictions from Fresnel's equations to 1% or better.

COO-2007-50 PC$4.00/MF$2.25
Illinois Univ., Chicago.
Lasing in a Ternary Mixture of He-Ne-O sub 2 at Pressures Up to 200 Torr.
R. DeYoung, S. Beckman, W. E. Wells, and G. H. Miley. 1974, 9p CONF-7410100-1

Descriptors: (*Gas lasers, *Operation), Helium, High pressure, Neon, Oxygen.

For abstract, see NSA 31 12, number 32844.

PAT-APPL-572 589/GA PC$3.25/MF$2.25
Department of the Navy Washington D C
A Laser with a High Frequency Rate of Modulation.
Patent Application,
Richard Swart Hughes. Filed 28 Apr 75, 8p Rept no.
Government-owned invention available for licensing. Copy of application available NTIS.

Descriptors: *Dye lasers, *Tunable lasers, *Tuning devices, Patents, Optical filters, Laser cavities, Laser modulators, Electric fields, Q switching.
Identifiers: *Patent applications, PAT-CL-350-160, Franz-Keldysh effect, Q switched lasers.

The patent application concerns a dye laser having a high frequency rate of modulation wherein a Franz-Keldysh filter is in the laser cavity to quench Q, and thereby provide modulation. The filter has an absorption edge that shifts in response to an applied electric field, thereby, modulating the laser beam.

20F. Optics

AD-A010 616/1GA PC$3.25/MF$2.25
Franklin Inst Swarthmore Pa Bartol Research Foundation
Optical Second Harmonic Generation from Surfaces,
J. M. Chen, J. R. Bower, and C. S. Wang. 1974, 6p ARO-8906.10-P
Grant DA-ARO-D-31-124-73-G124
Paper presented at Proceedings of the International Conference on Solid Surfaces (2nd), Kyoto (Japan), 25-29 Mar 74.
Availability: Pub. in Japanese Jnl. of Applied Physics, Suppl 2 Pt 2 P711-714 1974.

Descriptors: *Optics, *Surfaces, *Harmonics, *Lasers, *Crystals, Nonlinear systems, Polarization, Alkali metals, Adsorption, Reprints.

Optical second harmonic generation (SHG) from centro-symmetric crystals is restricted to the surface. A free electron model is used to derive the relevant source terms in the nonlinear polarization. Results of SHG from alkali metal covered surfaces of GE, Cu and Ag are presented. A monolayer of Na on Ge caused a tenfold increase in SHG. Drastic variations in SHG with Na deposition on Cu surfaces are attributed to the shifting of surface electronic states relative to the Fermi level. (Author)

AD-A010 628/6GA PC$3.75/MF$2.25
Bolt Beranek and Newman Inc Cambridge Mass
Fundamental Limitations on Image Restoration.
Final rept. 6 May-5 Nov 74,
Richard G. Barakat, and Elliot S. Blackman. Apr 75, 48p RADC-TR-75-118
Contract F30602-74-C-0176, ARPA Order-2646
See also report dated Oct 74, AD/A001 574.

Descriptors: *Light transmission, Turbulence, Probability density functions, Transfer functions.
Identifiers: Atmospheric attenuation, Image restoration, Lognormal density functions.

The research supported under this contract dealt with four problem areas pertinent to optical propagation through the turbulent atmosphere and to the problem of object restoration. They are: (1) The object restoration problem as an improperly posed inverse problem: a solution via singular value decomposition. (2) Sums of independent lognormally distributed random variables. (3) Realizability conditions on the covariance of the wavefront aberration function. (4) Statistics of the transfer function; temporal and random amplitude effects.

AD-A010 659/1GA PC$7.25/MF$2.25
Bowmar Canada Ltd Ottawa (Ontario) Optoelectronics Div
Room Temperature Injection Luminescence in II-VI Semiconductors.
Final rept. Dec 71-May 74,
Norman M. P. Lowland, and L. H. W. Bradfield.
Feb 75, 212p AFML-TR-74-274
Contract F33615-72-C-1466
See also report dated Apr 72, AD-749 135.

Descriptors: *Semiconductors, *Electroluminescence, *Light emitting diodes, Zinc sulfides, Zinc selenides, Gallium arsenides, Gallium phosphides, Injection diodes, Semiconductor junctions, Fabrication, Crystal defects, Charge carriers, Hot pressing, Crystal structure, Microstructure, Annealing, Photoluminescence, Indium, Doping, Single crystals, Canada.
Identifiers: Injection luminescence, Metal insulator semiconductors, Heterojunctions.

In a continuation of previous investigations of injection luminescent device structures several theoretical models are discussed which may account for the blue electroluminescence emission from nominally undoped or compensated ZnS diodes. An alternative objective for the investigations has involved experimental work on polycrystalline II-VI compounds and polycrystalline III-V compound materials, and the evaluation of the potential of these materials in light-emitting device applications. Other experimental studies included a comprehensive evaluation program on the morphological features of the ZnS and ZnSe powders, the microstructure of the hot-pressed II-VI and III-V compound powdered compact, the photoluminescence emission properties of the hot-pressed material before and after annealing treatment in various ZnAl alloys, and the structural analysis of polycrystalline solid solutions of II-VI and III-V compounds using x-ray diffraction techniques. Fabricated devices were evaluated in terms of their electrical and d.c. electroluminescence characteristics; the latter results were correlated with the basic photoluminescence properties of the materials.

AD-A010 762/3GA PC$3.25/MF$2.25
Massachusetts Inst of Tech Cambridge
A New High Resolution Holographic Contouring Method,
Philip D. Henshaw, and Shaoul Ezekiel. 1974, 7p
Availability: Pub. in Proceedings of the Society of Photo-Optical Instrumentation Engineers, v52 p95-101 1975.

Descriptors: *Holography, Laser beams, Angle of arrival, Diffuse reflection, Wedges, Photographic emulsions, Calibration, Contours, Gas lasers, Reprints.
Identifiers: Helium neon lasers, Double exposures, Multiple exposures.

A a new holographic method for producing contours on diffusely reflecting surfaces is reported. The contour spacing can be continuously varied from 2.5 micrometers (the lower limit so far) up to 1 mm or larger. The holographic emulsion is placed close to the object and a single beam of laser light (in our case, a 1 mw He-Ne laser) is used to supply both the object and reference beams. To produce contours, a double exposure hologram is recorded with the reference beam incident from two different angles. The observed contour spacing is determined by the angular separation of the incident beams as well as the viewing angle.

AD-A011 000/7GA PC$3.25/MF$2.25
Massachusetts Univ Amherst
Scattering of Light from thin Polymer Films. I. Multiple Scattering,
Robert E. Prud'homme, Larry Bourland, Raj T. Natarajan, and Richard S. Stein. 8 Oct 73, 15p ARO-10645.13-C
Contract DAAG46-72-C-0076, Grant DA-ARO-D-31-124-72-G161
Availability: Pub. in Jnl. of Polymer Science, v12 p1955-1968 1974.

Descriptors: *Light scattering, Thin films, Polymeric films, Polyethylene, Intensity, Numerical analysis, Reprints.

A general method is described to take into account the multiple scattering effect in a small-angle light scattering from thin polymer films. It is seen that multiple scattering tends to make the scattering envelope more diffuse, reducing the intensity in the high intensity regions and increasing it in the low intensity regions. The method is applied here to a spherulitic system, but it is valid for any other system where the principal scattering is in the forward direction. (Author)

AD-A011 002/3GA PC$3.25/MF$2.25
Massachusetts Univ Amherst Polymer Research Inst
The Scattering of Light by Correlated Assemblies of Anisotropic Rods in Two Dimensions,
Robert E. Prud'homme, and Richard S. Stein. 23 Jan 74, 20p ARO-10645.11-C
Contract DAAG46-72-C-0072, Grant DA-ARO-D-31-124-72-G161
Availability: Pub. in Jnl. of Polymer Science, v12 p1805-1823 1974.

Descriptors: *Light scattering, *Anisotropy, Rods, Perturbation theory, Correlation techniques, Approximation(Mathematics), Tetrafluoroethylene resins, Two dimensional, Polymeric films, Reprints.

The scattering from an assembly of anisotropic rods having correlated orientation is calculated in terms of a correlation function expressing the probability of parallelism of orientation of their optic axes as a function of their separation. The scattering is dependent upon the product of a form factor for the scattering from an individual rod and an interference factor dependent upon this correlation function. (Author)

N75-21590/5GA PC$3.25/MF$2.25
Cornell Univ., Ithaca, N.Y. Center for Radiophysics and Space Research.
A Practical Multi-Spectrum Hadamard Transform Spectrometer.
M. H. Tai, D. A. Briotta, Jr., N. Kamath, and M. Harwit. 1975, 17p NASA-CR-142649
Contracts NGR-33-010-210, F19628-74-C-0110

Descriptors: *Infrared spectra, *Real time operation, *Spectrometers, Cathode ray tubes, Minicomputers, Optical equipment.

For abstract, see STAR 1313

N75-21602/8GA PC$3.75/MF$2.25
Defence Research Establishment Valcartier (Quebec).
Approximation of off-Shell Scattering Operators for Non-Lorentzian Line Shape Calculations.
P. L. Roney. Sep 74, 34p DREV-711/74
Contract DREV PROJ. 97-82-06

Descriptors: *Atmospheric attenuation, *Emission spectra, *Jet aircraft, *Missiles, *Operators (Mathematics), Frequency ranges, Infrared radiation, Matrices (Mathematics).

For abstract, see STAR 1313

N75-21635/8GA PC$3.75/MF$2.25
Systems Research Lab., Champaign, Ill.
Research Study on Stabilization and Control Modern Sampled-Data Control Theory. Analysis and Design of the Digital Large Space Telescope System.
Bimonthly Report.
B. C. Kuo. 1 Mar 75, 44p NASA-CR-120738
Contract NAS8-29853

Descriptors: *Digital systems, *Instrument errors, *Telescopes, Friction, Noise (Sound), Pointing control systems.

For abstract, see STAR 1313

N75-22121/8GA PC$5.75/MF$2.25
Optical Science Consultants, Yorba Linda, Calif.
Analysis of Aperture Averaging Measurements.
Final Report, 2 Jun. 1974 - 2 Mar. 1975.
D. L. Fried. Mar 75, 134p NASA-CR-143717, DR-041
Contract NAS5-20537

Descriptors: *Apertures, *Atmospheric turbulence, *Laser applications, *Scintillation counters, *Signal fading, Data acquisition, Distribution moments, Flight tests, Normal density functions.

For abstract, see STAR 1313

N75-22122/6GA PC$4.25/MF$2.25
Lockheed Electronics Co., Houston, Tex. Aerospace Systems Div.
Multi-Mode Optical Sensor (B) Evaluation Test Report.
R. A. Smith. 3 Jan 75, 53p NASA-CR-141764, LEC-5187
Contract NAS9-12200

Descriptors: *Optical measuring instruments, *Performance tests, Magnetic fields, Numerical control, Photocathodes, Photosensitivity, Range and range rate tracking, Star trackers.

For abstract, see STAR 1313

PAT-APPL-558 600/GA PC$3.25/MF$2.25
National Aeronautics and Space Administration. Lyndon B. Johnson Space Center, Houston, Tex.
Window Defect Planar Mapping Technique.
Patent Application.
F. R. Minton, and U. O. Graham. Filed 14 Mar 75, 10p NASA-CASE-MSC-19442-1
Contract NAS9-14000
Government-owned invention available for licensing. Copy of application available NTIS.

Descriptors: *Mapping, *Planar structures, *Surface defects, *Windows (Apertures), Fiber optics, Photographic measurement, Photographic processing, *Patent applications.

A method of window defect planar mapping is presented. The windows are edge lighted by fiber optics and light sensitive contact paper is

applied to the surface of the windows. When the light source is activated, the windows are illiminated, and the light sensitive paper is exposed. A photographic record of window defects is provided upon subsequent chemical development of the light sensitive paper.

PAT-APPL-561 022/GA PC$3.25/MF$2.25
Department of the Navy Washington D C
Multi-Porro Reflector.
Patent Application,
Edward Alan Rubin. Filed 21 Mar 75, 13p Rept no.
Government-owned invention available for licensing. Copy of application available NTIS.

Descriptors: *Prisms, *Optical equipment, *Reflectors, Patents, Guidance.
Identifiers: PAT-CL-350-299, *Patent applications.

The patent application discloses a multi-porro prism system for enlarging the view in a limited area. A plurality of smaller porro prisms are disposed adjacent one another in a planar array in which the total non-reflecting area remains constant.

PATENT-3 872 293 Not available NTIS
Department of the Navy Washington D C
Multi-Dimensional Fourier Transform Optical Processor.
Patent,
Eugene L. Green. Filed 20 Jul 73, patented 18 Mar 75, 16p Rept nos. PAT-APPL-384 151,
Government-owned invention available for licensing. Copy of patent available Commissioner of Patents, Washington, D.C. 20231 $0.50.

Descriptors: *Optical processing, *Sonar signals, *Signal processing, *Optical equipment, *Patents, Fourier transformation, Dielectric waveguides, Hydrophones, Transducers.
Identifiers: PAT-CL-235-181.

The principal object of the invention is to provide time and space Fourier transform signal processing for sonar arrays. Another object is to provide Fourier transform processing that is an improvement over conventional time delay beam forming followed by frequency analysis. A further object is to provide multi-dimensional Fourier transform processing by coherently remapping and thereby preserving phase and amplitude, from the output of one stage of processing to the input of a second stage.

UCRL-76618 PC$4.00/MF$2.25
California Univ., Livermore Lawrence Livermore Lab.
Measurement of Figure of Diamond Turned Optics.
T. T. Saito. 11 Mar 75, 12p CONF-750311-1

Descriptors: (*Mirrors, *Machining), (*Optical systems, Machining), Diamonds, Measuring methods, Molybdenum, Tori, Toroidal configuration.

For abstract, see NSA 31 12, number 35723.

20G. Particle Accelerators

AECL-4931 PC$7.25/MF$2.25
Atomic Energy of Canada Ltd., Chalk River, Ontario. Chalk River Nuclear Labs.
Physics Division Progress Report, July 1 to September 30, 1974.
Oct 74, 87p PR-P-103
U.S. Sales Only.

Descriptors: (*Van de graaff accelerators, *Operation), (*Nuclear physics, *Research programs), Algorithms, Casks, Chalk river nuclear labs, Computer codes, Corrosion, Cryostats, Deposition, Design, Energy levels, F codes, Fires, Fuel elements, Heat transfer, Kinetics, Lifetime, Matrices, Measuring methods, Neutrons, Nuclei, Reactor cooling systems, Semiconductor detectors, Shock waves, Simulation, Two-phase flow.

For abstract, see NSA 31 12, number 34131.

ANL/HEP-75-02 PC$34.00/MF$2.25
Argonne National Lab., Ill.
Proceedings of the Summer Study on High-Energy Physics with Polarized BEAMS, Argonne, Illinois, July 22--26, 1974.
J. B. Roberts. 1974, 617p

Descriptors: (*Polarized beams, *Uses), (*High energy physics, *Meetings), Leading abstract.

For abstract, see NSA 31 12, number 34154.

BNL-tr-588 PC$4.00/MF$2.25
Brookhaven National Lab., Upton, N.Y.
Experimental Facility for Electron Cooling.
V. V. Anashin, G. I. Budker, and N. S. Dikanskii. 1974, 11p
Translated by S.J. Amoretty of Preprint 74-86.

Descriptors: (*Storage rings, *Electron cooling), Operation, Proton beams, Specifications.

For abstract, see NSA 31 12, number 34177.

BNL-tr-591 PC$4.00/MF$2.25
Brookhaven National Lab., Upton, N.Y.
Kinetics of Electron Cooling.
G. I. Budker, Ya. S. Derbenev, N. S. Dikanskii, V. V. Parkhomchuk, and D. V. Pestrikov. 1974, 11p
Translated by S.J. Amoretty of Preprint 74-85.

Descriptors: (*Storage rings, *Electron cooling), Beam currents, Beam dynamics, Beam luminosity.

For abstract, see NSA 31 12, number 34178.

BNL-tr-593 PC$4.00/MF$2.25
Brookhaven National Lab., Upton, N.Y.
Preliminary Experiments on Electron Cooling.
G. I. Budker, N. S. Kikanskii, V. I. Kudelainen, I. N. Meshkov, and V. V. Parkhomchuk. 1974, 12p
Translated by S.J. Amoretty of Preprint 74-87.

Descriptors: (*Storage rings, *Electron cooling), Betatron oscillations, Lifetime, Proton beams.

For abstract, see NSA 31 12, number 34179.

LBL-3686 PC$4.00/MF$2.25
California Univ., Berkeley Lawrence Berkeley Lab.
Bevalac: A High-Energy Heavy-Ion Facility. Status and Outlook.
H. A. Grunder. 4 Mar 75, 7p
Contract W-7405-eng-48

Descriptors: (*Synchrotrons, *Planning), (*Heavy ions, *Acceleration), Beam injection.

For abstract, see NSA 31 12, number 34133.

SAND-74-5872 PC$4.50/MF$2.25
Sandia Labs., Albuquerque, N.Mex.
Collective Ion Acceleration with Intense Electron BEAMS.
C. L. Olson. 1975, 29p CONF-750335-12

Descriptors: (*Collective accelerators, *Reviews), Electron beam injection, Electron beams.

For abstract, see NSA 31 12, number 34135.

UCRL-74138 PC$4.00/MF$2.25
California Univ., Livermore Lawrence Livermore Lab.
LII 100-Mev Electron Linac: Design Considerations and Performance of the Beam-Transport Vacuum System.
M. C. Lara, and H. E. Brooks. 18 Mar 75, 6p

Descriptors: (*Linear accelerators, *Beam transport), Cleaning, Design, Electron beams, Maintenance, Performance, Positron beams, Turbomolecular pumps, Vacuum systems.

For abstract, see NSA 31 12, number 34144.

20H. Particle Physics

AD-A010 602/1GA PC$3.25/MF$2.25
Chicago Univ Ill James Franck Inst
Body-Fixed Equations for Atom-Molecule Scattering: Exact and Centrifugal Decoupling Methods,
R. B. Walker, and J. C. Light. 6 Sep 74, 11p ARO-9751.15-C
Grant DA-ARO-D-31-124-71-G170
Availability: Pub. in Chemical Physics, v7 p84-93 1975.

Descriptors: *Inelastic scattering, Approximation(Mathematics), Rotation, Angular momentum, Theory, Excitation, Equations, Molecules, Atoms, Reprints.
Identifiers: *Centrifugal decouping, Molecular scattering.

We demonstrate an exact method for solving the close-equations for rotationally inelastic scattering the body-fixed (BF) coordinate representation, using a slight modification of the exponential method which allows application of the known boundary conditions for the space-fixed (SF) coordinate frame. The nature of the coupling in the BF frame suggests approximation with reduce the problem to a set of problems each of a smaller dimensionality. Using an atom-rigid rotor model potential, we have compared the decoupling approximation suggested by Pack and by McGuire and Kouri to the fully coupled problem. We find the cnetrifugal decoupling (CD) approximation to work best at low total angular momentaJ, and for low rotor statesj. Opacity functions for inelastic transitions are generally better than ones for elastic transitions, due to errors in the phases of elastic S-matrix elements. However, at highJ, CD often severely underestimates the inelastic transition probabilities. (Author)

AD-A010 611/2GA PC$3.25/MF$2.25
Columbia Univ New York Dept of Chemistry
Laser Fluorescence Study of AlO Formed in the Reaction Al + O2: Product State Distribution, Dissociation Energy, and Radiative Lifetime,
P. J. Dagdigian, H. W. Cruse, and R. N. Zare. 21 Oct 74, 13p ARO-9385.8-C
Grant DA-ARO-D-31-124-73-G82
Availability: Pub. in Jnl. of Chemical Physics, v62 n5 p1824-1833, 1 Mar 75.

Descriptors: *Aluminum, *Aluminum compounds, *Monoxides, *Combustion, *Excitation, *Fluorescence, Laser beams, Dissociation, Ground state, Energy, Reprints.

AD-A010 691/4GA PC$3.25/MF$2.25
IBM Thomas J Watson Research Center Yorktown Heights N Y
Electron Spectroscopy of GaAs and AlAs Surfaces,
R. Ludeke, and L. Esaki. 1975, 12p ARO-11574.4-P
Contract DAHC04-74-C-0012
Availability: Pub. in Surface Science, 47 p132-142 1975.

Descriptors: *Gallium Arsenides, *Aluminum compounds, *Electron Spectroscopy, Arsenides, Auger electron spectroscopy, Excitation, Oxygen, Surface properties, Energy levels, Band spectra, Reprints.

The low energy electron loss spectra (LELS) and Auger spectra of clean and oxygen contaminated (100) GaAs and AlAs are reported. Losses due to both interband and plasmon excitations are observed. Losses arising from interband transitions from the Ga d-band to empty conduction bands are interpreted in terms of the conduction bands density of states. By changing the primary electron energy both surface and bulk features of the conduction bands can be probed. for clean (100) GaAs a large density of empty surface states is located near the bottom of the conduction band. (Author)

AD-A010 950/4GA PC$3.75/MF$2.25
Queen'S Univ Belfast (Northern Ireland) Dept of Applied Mathematics and Theoretical Physics
CIV3 - A General Program to Calculate Configuration Interaction Wave Functions and Electric-Dipole Oscillator Strengths,
A. Hibbert. 28 Aug 74, 34p
Contract N00014-69-C-0035
Availability: Pub. in Computer Physics Communications, 9 p141-172 1975.

Descriptors: *Atomic orbitals, Wave functions, Boundary value problems, Transitions, Oscillation, Complex compounds, Ireland, Dipoles, Interactions, Coupling(Interaction), Reprints.

The program generates configuration interaction wave functions, which may then be used to calculate oscillator strengths of transitions in atomic systems. (Author)

AD-A010 991/8GA PC$3.25/MF$2.25
North Carolina Univ Chapel Hill William R Kenan Jr Labs of Chemistry
Absolute Unimolecular Decay Rates of Energy Selected C4H6(+),
Arthur S. Werner, and Tomas Baer. 5 Dec 74, 13p ARO-10200.8-C
Grant DA-ARO-D-31-124-72-G20
Availability: Pub. in Jnl. of Chemical Physics, v62 n7 p2900-2910, 1 Apr 75.

Descriptors: *Molecular energy levels, Decomposition, Decay schemes, Molecular ions, Statistical mechanics, Ionization potentials, Kinetic energy, Photoionization, Reprints.

AD-A010 993/4GA PC$3.25/MF$2.25
Indiana Univ Bloomington Dept of Physics
Comment on 'Formal Scattering Theory with Shadow States',
R. G. Newton. 26 Nov 73, 3p ARO-5992.83-P
Grant DA-ARO-D-31-124-72-G21
Comment on article available in Physical Review D, v7 p3617 1973.
Availability: Pub. in Physical Review D, v11 n4 p958-959, 15 Feb 75.

Descriptors: *Particles, *Scattering, *Hilbert space, Reprints.
Identifiers: Shadow states.

It is pointed out that examination of a double-scattering experiment reveals an inconsistency in the scattering theory proposed by Richard in connection with Sudarshan's shadow states. The theory gives different amplitudes for a double-scattering experiment, depending on the stage at which the shadow world is eliminated from explicit reference. (Author)

AD-A011 005/6GA PC$3.25/MF$2.25
New York Univ N Y Dept of Physics
Theory of Collision Effects on Atomic and Molecular Line Shapes,
Paul R. Berman. 21 Dec 74, 16p ARO-10895.6-P
Grant DA-ARO-D-31-124-73-G128
Availability: Pub. in Applied Physics, 6 p283-296 1975.

Descriptors: *Particle collisions, Spectral lines, Atomic energy levels, Molecular energy levels, Shape, Perturbation theory, Reprints.

A review of recent developments in the theory of the effects of binary collisions on the spectral profiles associated with atomic and molecular systems is presented. To consistently account for collisional perturbations of both the internal energy levels and the velocity of active (emitting or absorbing) atoms and molecules, one must use a theory in which the center-of-mass motion of the active atoms has been quantized. Following this procedure general equations for absorption or emission line shapes are obtained. The line shapes may exhibit narrowing or broadening with increasing perturber pressure, depending upon the nature of the collision interaction. The physical significance of the collision mechanisms giving rise to such behavior is discussed, as is the experimental evidence in support of the theory. Various applications of the theory are presented. (Author)

ANCR-1200 PC$4.00/MF$2.25
Aerojet Nuclear Co., Idaho Falls, Idaho.
Nuclear Structure Studies Utilizing Lampf. Annual Progress Report.
C. W. Reich, R. C. Greenwood, R. G. Helmer, R. J. Gehrke, and R. L. Heath. Jan 75, 30p
Contract AT(10-1)-1375

Descriptors: (*Nuclear structure, *Research programs), Beta decay, Lampf linac, Nuclear models.

For abstract, see NSA 31 12, number 34876.

ANL/HEP-7466 PC$4.00/MF$2.25
Argonne National Lab., Ill.
Polarized Proton Beam Physics and Related Topics.
A. G. Wicklund. 5p CONF-740713-37

Descriptors: (*Proton-neutron interactions, *Cross sections), (*Proton-proton interactions, *Polarization), (*Pion-proton interactions, Polarization), (*Zgs, *Polarized beams), Correlations, N*resonances, Proton beams, Scattering amplitudes, Spin.

For abstract, see NSA 31 12, number 34596.

ANU-P-601 PC$4.00/MF$2.25
Australian National Univ., Canberra. Dept. of Nuclear Physics.
Program for Calculation of gamma-Ray Angular Distributions Following Statistical Compound Nucleus Reactions (Supersedes Sections of Anu-p--584).
D. C. Kean. Sep 74, 8p
U.S. Sales Only.

Descriptors: (*Compound-nucleus reactions, Computer codes), (*Computer codes, *M codes), Angular distribution, Computer calculations, Gamma radiation.

For abstract, see NSA 31 12, number 34985.

BNL-19455 PC$4.50/MF$2.25
Brookhaven National Lab., Upton, N.Y.
Evaluation of the Neutron and gamma-Ray Production Cross Sections of exp 151 Eu and exp 153 Eu.
H. Takahashi. Nov 74, 28p ENDF-213

Descriptors: (*Europium 151, Neutron reactions), (*Europium 153, Neutron reactions), (*Neutron reactions, *Capture), Cross sections, Elastic scattering, Inelastic scattering, Nuclear models, Optical models.

For abstract, see NSA 31 12, number 34925.

BNL-19456 PC$4.00/MF$2.25
Brookhaven National Lab., Upton, N.Y.
Evaluation of the Neutron Cross Section for exp 152 Eu and exp 154 Eu.
H. Takahashi. Nov 74, 18p ENDF-214

Descriptors: (*Europium 152, Neutron reactions), (*Europium 154, Neutron reactions), (*Neutron reactions, *Cross sections), Nuclear models.

For abstract, see NSA 31 12, number 34926.

BNL-19880 PC$4.00/MF$2.25
Brookhaven National Lab., Upton, N.Y.
Neutron Background Study for Lampf Experiment No. 53: Study of the Neutrino Capture Cross Sections in exp 37 C1 with mu + Decay Neutrinos.
J. C. Jr. Evans, R. Jr. Davis, S. L. Meyer, E. C. Fowler, and J. Cunnane. Mar 75, 8p

Descriptors: (*Chlorine 37, Neutrino reactions), (*Neutrino reactions, *Capture), Background noise, Cross sections, Leptonic decay, Muons plus, Neutrinos, Shielding.

For abstract, see NSA 31 12, number 34827.

CEA-CONF-2891 PC$4.00/MF$2.25
CEA Centre d'Etudes Nucleaires de Saclay, 91 - Gif-sur-Yvette (France). Service de Physique Nucleaire a Basse Energie; Pontificia Universidade Catolica do Rio de Janeiro (Brazil).
Influence of a Critical Angular Momentum on Angular Distributions of Spin-Zero Particle Reactions.
E. F. da Silveira. 9p CONF-740747-1
U.S. Sales Only.

Descriptors: (*Compound-nucleus reactions, *Nuclear reaction kinetics), (*Carbon 12, Carbon 12 reactions), (*Carbon 12 reactions, Compound-nucleus reactions), Alpha particles, Angular distribution, Angular momentum, Compound nuclei, Excitation, Ground states, Hauser-feshbach theory, High spin states, Limiting values, Mev range 10-100, Neon 20, Partial waves.

For abstract, see NSA 31 12, number 34986.

COM-75-50311/0GA Not available NTIS
National Bureau of Standards, Washington, D.C.
Electroexcitation of (11)B.
Final rept.,
P. T. Kan, G. A. Peterson, D. V. Webb, S. P. Fivozinsky, and J. W. Lightbody, Jr. Feb 75, 9p
Contract N00014-67-A-0230-0009
Pub. in Physical Review, C, v11 n2 p323-331 Feb 75.

Descriptors: *Electron scattering, Excitation, Atomic energy levels, Resonance, Electron transitions, Boron.
Identifiers: Reprints, *Boron II, *Electroexcitation.

Electrons with incident energies between 52.3 and 90.0 MeV have been scattered from the nucleus of 11B. Spectra of scattered electrons corresponding to excitation energies up to 32 MeV were observed. Form factors of the states at 2.12, 4.44, 5.02, 8.57, and 8.93 MeV, and of the continuum region up to 30 MeV, have been separated into longitudinal and transverse components. The 11 B dipole giant resonance is smooth relative to those of 12C and 13C. A mixed M1-E2 transition was observed at 13.0 MeV and a broad transverse resonance, possibly magnetic, was seen at 15.5 MeV.

CONF-750118-2 PC$4.00/MF$2.25
Oak Ridge National Lab., Tenn.
Reaction Times for "Quasi-Fission" and on the Critical Distance Concept in Heavy-Ion Fusion Reactions.
F. Plasil. 10p

Descriptors: (*Heavy ion reactions, *Fusion reactions), (*Fission, *Time dependence), (*Gold 197, Heavy ion reactions), (*Copper, Heavy ion reactions), Angular distribution, Bismuth 209, Cross sections, Distance, Equilibrium, Krypton, Mass.

For abstract, see NSA 31 12, number 34946.

CONF-750303-14 PC$4.00/MF$2.25
Oak Ridge National Lab., Tenn.
Development of a Two-Step Hauser--Feshbach Code with Precompound Decays and gamma-Ray Cascades: A Theoretical Tool for Cross Section Evaluations.
C. Y. Fu. 4p

Descriptors: (*Neutron reactions, *Computer codes), (*Fluorine 19, Neutron reactions), (*Calcium 40, Neutron reactions), (*Iron 56, Neutron reactions), Differential cross sections, Energy spectra, Fast neutrons, Gamma cascades, Gamma radiation, Hauser-feshbach theory, Mev range 10-100, Precompound-nucleus emission, Programming, Neutron spectra, Gamma spectra.

For abstract, see NSA 31 12, number 34987.

CONF-750303-15 PC$4.00/MF$2.25
Union Carbide Corp., Oak Ridge, Tenn. Nuclear Div.
Survey of Computer Codes Which Produce Multigroup Data from Endf/B-IV.
N. M. Greene. 7p

Descriptors: (*Nuclear data collections, *Data processing), (*Computer codes, *A codes), Comparative evaluations, E codes, M codes, Multigroup theory, Reviews, S codes.

For abstract, see NSA 31 12, number 34774.

CONF-750303-23 PC$4.00/MF$2.25
Oak Ridge National Lab., Tenn.
Ornl Neutron Scattering Cross Section Measurements from 4 to 8.5 Mev.
W. E. Kinney, and F. G. Perey. 9p

Descriptors: (*Neutron reactions, *Elastic scattering), Chromium, Chromium 52, Differential cross sections, Inelastic scattering, Mev range 01-10, Nickel, Nickel 60, Ornl.

For abstract, see NSA 31 12, number 34864.

CONF-750303-25 PC$4.00/MF$2.25
Oak Ridge National Lab., Tenn.
Description of the Endf/B-IV Silicon Evaluation Energy Distributions of Outgoing Particles.
D. Larson. 3p

Descriptors: (*Silicon, Neutron reactions), (*Neutron reactions, *Compound-nucleus reactions), Alpha spectra, Cross sections, Fast neutrons, Gamma spectra, Hauser-feshbach theory, Mev range 01-10, Mev range 10-100, Neutron spectra, Proton spectra, Excitation functions, Inelastic scattering, Alpha particles, Magnesium isotopes, Neutrons, Aluminium isotopes, Protons, Capture, Gamma radiation, Silicon isotopes.

For abstract, see NSA 31 12, number 34828.

CONF-750303-35 PC$4.00/MF$2.25
Argonne National Lab., Ill.
Comparison of Vim and mc exp 2 -2: Two Detailed Solutions of the Neutron Slowing-down Problem.
R. E. Prael, and H. II Henryson. Mar 75, 6p
Contract W-31-109-Eng-38

Descriptors: (*Neutron slowing-down theory, Computer codes), (*Computer codes, *M codes), Comparative evaluations, Cross sections, Eigenvalues, Monte carlo method, Multigroup theory, Neutron transport theory, Reliability, Resonance, Stochastic processes, V codes, Zpr-6 reactor.

For abstract, see NSA 31 12, number 34775.

COO-1779-111 PC$13.00/MF$2.25
Michigan State Univ., East Lansing Dept. of Chemistry.
Anomalous Epsilon/ beta exp + Decay Branching Ratios.
R. B. Firestone. 1974, 200p

Descriptors: (*Europium 143, *Beta-plus decay), (*Samarium 143, Beta-plus decay), (*Gadolinium 143, Beta-plus decay), (*Promethium 143, *Energy levels), Branching ratio, Coincidence methods, Electron capture decay, Europium 145.

For abstract, see NSA 31 12, number 34881.

COO-1779-151 PC$4.75/MF$2.25
Michigan State Univ., East Lansing.
Energy and Intensity Calibration Standards.
R. B. Firestone. 1974, 33p

Descriptors: (*Radioisotopes, *Calibration standards), (*Gamma sources, Calibration standards), Gamma radiation.

For abstract, see NSA 31 12, number 35059.

COO-2171-42 PC$4.00/MF$2.25
Rochester Univ., N.Y. Dept. of Physics and Astronomy; Toronto Univ., Ontario (Canada). Dept. of Physics.
E2 Polynomial Strengths: A Comparison with Shell-Model Results.
J. F. Draayer, J. P. French, V. Potbhare, and S. S. M. Wong. 10p

Descriptors: (*Nuclei, *Energy-level transitions), Comparative evaluations, Nuclear structure, Polynomials, Shell models, Sum rules.

For abstract, see NSA 31 12, number 34988.

COO-2318-7 PC$5.75/MF$2.25
Washington Univ., St. Louis, Mo.
Spectroscopy of Nuclear Systems. Progress Report, January 1--December 31, 1974.
E. S. Macias. 1974, 51p
Contract AT(11-1)-2318

Descriptors: (*Nuclear physics, *Research programs), (*Intermediate mass nuclei, *Beta decay), (*Cyclotrons, *Operation), Energy levels, Gamma spectroscopy, Missouri, Radiometric gages, Reaction product transport systems, Targets, Thickness gages.

For abstract, see NSA 31 12, number 34882.

COO-3065-107 PC$4.00/MF$2.25
Rochester Univ., N.Y. Dept. of Physics and Astronomy.
Neutral Beam Studies of Coherent Production on Nuclei from 6-16 Gev/C.
W. C. Jr. Carithers. 20 Jan 75, 17p CONF-740984-2, UR-517
Contract AT(11-1)-3065

Descriptors: (*Delta-1236 resonances, *Coherent production), (*K-892 resonances, Coherent production), (*Resonance particles, Coherent production), Coulomb excitation, Diagrams, Gev range 01-10, Gev range 10-100, Kaon reactions, Kaons neutral, Linear momentum, N*resonances, Neutron reactions, Nuclear matter, Total cross sections.

For abstract, see NSA 31 12, number 34597.

COO-3069-279 PC$4.00/MF$2.25
Massachusetts Inst. of Tech., Cambridge.
Field Theory Methods for Finite Nuclear Systems and the Possibility of Density Isomerism.
A. K. Kerman, and L. D. Miller. 1974, 18p CONF-740740-1
Contract AT(11-1)-3069

Descriptors: (*Nuclear matter, *Quantum field theory), Calcium 40, Hartree-fock method, Iterative methods, Sigma model.

For abstract, see NSA 31 12, number 34989.

COO-3274-15 PC$4.25/MF$2.25
Rochester Univ., N.Y. Nuclear Structure Research Lab.; Brookhaven National Lab., Upton, N.Y.; Johns Hopkins Univ., Baltimore, Md. Dept. of Physics.
Backbending and Decoupled Bands in exp 126 BA.
C. Flaum, D. Cline, A. W. Sunyar, O. C. Kistner, and Y. K. Lee. 9 Sep 74, 21p CONF-740934-4

Descriptors: (*Barium 126, *High spin states), Energy levels, Gamma radiation, Parity, Angular distribution, Cadmium 114, Mev range 10-100, Neutrons, Oxygen 16 reactions, Polarization.

For abstract, see NSA 31 12, number 34887.

DP-MS-74-61 PC$4.00/MF$2.25
Du Pont de Nemours (E.I.) and Co., Aiken, S.C. Savannah River Lab.
Consistent Set of Transplutonium Multigroup Cross Sections.
R. W. Benjamin, V. D. Vandervelde, T. C Gorrell, and F. J. McCrosson. 1975, 6p CONF-750303-7

Descriptors: (*Transplutonium elements, Neutron reactions), (*Actinide nuclei, Neutron reactions), (*Neutron reactions, *Capture), Burnup, Cross sections, Ev range, Kev range, Mev range 01-10, Multigroup theory, Reactors, Thermal fission, Thermal neutrons.

For abstract, see NSA 31 12, number 34961.

DP-MS-74-62 PC$4.00/MF$2.25
Du Pont de Nemours (E.I.) and Co., Aiken, S.C. Savannah River Lab.
Nuclear Data for Actinide Recycle.
E. J. Hennelly. 1975, 5p CONF-750303-19

Descriptors: (*Transplutonium elements, *Neutron reactions), (*Actinide nuclei, Neutron reactions), Burnup, Cross sections, Fuel cycle, Neutron spectra, Nuclear data collections, Nuclear reaction yield, Radioactive waste management, Reprocessing, Waste management.

For abstract, see NSA 31 12, number 34962.

IAE-2340 PC$4.25/MF$2.25
Gosudarstvennyj Komitet po Ispol'zovaniyu Atomnoj Ehnergii SSSR, Moscow. Inst. Atomnoj Ehnergii.
Neutron Transport in Media with Changing Parameters. I. Existence and Uniqueness of Generalized Solutions.
V. M. Novikov, and S. B. Shikhov. 1973, 24p
In Russian. U.S. Sales Only.

Descriptors: Analytical solution, Delayed neutrons, Neutron transport theory.

For abstract, see NSA 31 12, number 34776.

JINR-E1-8248 PC$4.50/MF$2.25
Joint Inst. for Nuclear Research, Dubna (USSR). Lab. of Nuclear Problems.
Mechanism of Fast Helium and Tritium Production by 665 Mev /Protons on Light Nuclei.
V. I. Komarov, A. G. Molokanov, G. P. Reshetnikov, O. V. Savchenko, and Z. Tesh. 1974, 27p
U.S. Sales Only.

Descriptors: (*Helium 3, *Production mechanisms), (*Tritium, Production mechanisms), (*Helium 4, Production mechanisms), (*Carbon 12, *Proton reactions), Cross sections, Light nuclei, Nuclear reaction kinetics, Pions, Quasi-elastic scattering.

For abstract, see NSA 31 12, number 34803.

JINR-E1-8456 PC$4.00/MF$2.25
Joint Inst. for Nuclear Research, Dubna (USSR). Lab. of Theoretical Physics.
Total Elastic Proton--Proton Cross Section from 9 to 300 Gev/C.
V. Bartenev, A. Kuznetsov, and B. Morozov. 1974, 9p
U.S. Sales Only.

Descriptors: (*Proton-proton interactions, *Elastic scattering), Gev range 01-10, Gev range 10-100, Gev range 100-1000, Total cross sections.

For abstract, see NSA 31 12, number 34599.

JINR-E2-8488 PC$4.00/MF$2.25
Joint Inst. for Nuclear Research, Dubna (USSR). Lab. of Theoretical Physics.
Harmonic Analysis on the Lorentz Group, Quasipotential Approach and Proton--Proton Elastic Scattering at High Energies.
S. Ch. Mavrodiev, and D. Karadjov. 1974, 13p
U.S. Sales Only.

Descriptors: (*Proton-proton interactions, *Elastic scattering), Born approximation, Coordinates, Differential cross sections, Lorentz transformations, Mathematical space, Scattering amplitudes.

For abstract, see NSA 31 12, number 34707.

JINR-E2-8540 PC$4.00/MF$2.25
Joint Inst. for Nuclear Research, Dubna (USSR).
Investigation of Polaron Model by Functional Integration Method.
E. A. Kochetov, S. P. Kuleshov, and M. A. Smondyrev. 1975, 13p
U.S. Sales Only.

Descriptors: (*Polarons, *Effective mass), Bogolyubov transformation, Conservation laws, Functionals, Hadron-hadron interactions, Integrals, Linear momentum.

For abstract, see NSA 31 12, number 34627.

JINR-E6-8327 PC$4.00/MF$2.25
Joint Inst. for Nuclear Research, Dubna (USSR). Lab. of Nuclear Problems.
The G-Factors of the First and Second Excited States in exp 151 Gd.
V. P. Afanasiev, M. Budzynski, and I. Demeter. 1974, 17p
U.S. Sales Only.

Descriptors: (*Gadolinium 151, *Energy levels), Angular correlation, Excited states, Gyromagnetic ratio, Hyperfine structure, Integrals, Terbium 151, Terbium 155.

For abstract, see NSA 31 12, number 34928.

JINR-E6-8535 PC$4.00/MF$2.25
Joint Inst. for Nuclear Research, Dubna (USSR).
Excitation of Metastable High Spin States in Negative Pion Capture by Nuclei.
V. S. Butsev, D. Chultem, J. Ganzorig, Yu. K. Gavrilov, and S. M. Polikanov. 1975, 9p
U.S. Sales Only.

Descriptors: (*Pion reactions, *Capture), Excitation, Metastable states, Pions minus, Spin.

For abstract, see NSA 31 12, number 34614.

JINR-P2-8512 PC$4.25/MF$2.25
Joint Inst. for Nuclear Research, Dubna (USSR).
Interference of Two-Particle States in Particle Physics and Astronomy.
G. I. Kopylov, and M. I. Podgoretskii. 1975, 24p
In Russian. U.S. Sales Only.

Descriptors: (*Particle interactions, *Two-body problem), (*Astronomy, Two-body problem), Coordinates, Elementary particles, Energy dependence, Interference, Linear momentum, Mathematical space, Multiple production, Radiation detectors, Space-time, Time dependence, Volume.

For abstract, see NSA 31 12, number 34628.

JINR-P4-8526 PC$4.00/MF$2.25
Joint Inst. for Nuclear Research, Dubna (USSR).
Energies and Charge Form Factors of the Carbon Nucleus with Radial Oscillations of alpha Clusters Taken into Account.
V. S. Kinchakov. 1975, 14p
In Russian. U.S. Sales Only.

Descriptors: (*Carbon 12, Electron reactions), (*Electron reactions, *Elastic scattering), Binding energy, Cluster model, Form factors, Generator-coordinate method, Nuclear radii, Nuclear structure, Oscillations, Rotational states.

For abstract, see NSA 31 12, number 34804.

JINR-P6-8279 PC$4.00/MF$2.25
Joint Inst. for Nuclear Research, Dubna (USSR). Lab. of Nuclear Problems.
Decay of exp 77 RB.
Ya. Liptak, and W. Habenicht. 1974, 17p
In Russian. U.S. Sales Only.

Descriptors: (*Rubidium 77, *Electron capture decay), (*Krypton 77, *Energy levels), Ft value, Gamma radiation.

For abstract, see NSA 31 12, number 34865.

JINR-P6-8384 PC$4.25/MF$2.25
Joint Inst. for Nuclear Research, Dubna (USSR). Lab. of Nuclear Problems.
Investigation of the Radioactive Decay of exp 149 Gd.
V. S. Aleksandrov, Ts. Vylov, I. I. Gromova, A. A. Klyuchnikov, and A. F. Novgorodov. 1974, 21p
In Russian. U.S. Sales Only.

Descriptors: (*Gadolinium 149, *Electron capture decay), (*Excited states, *Energy levels), Energy-level transitions, Europium 149, Gamma spectra.

For abstract, see NSA 31 12, number 34891.

JINR-P6-8419 PC$4.00/MF$2.25
Joint Inst. for Nuclear Research, Dubna (USSR). Lab. of Nuclear Problems.
Identification of exp 158 YB, T/sub 1/2/ = (1.1 +- 0.2) Min.
V. I. Gilev, M. Gonucek, K. Ya. Gromov, A. Lyatushinski, and I. Penev. 1974, 9p
In Russian. U.S. Sales Only.

Descriptors: (*Ytterbium 158, *Alpha decay), Gamma spectra, Half-life, Isobaric nuclei.

For abstract, see NSA 31 12, number 34929.

JUL-1150-FF PC$6.25/MF$2.25
Kernforschungsanlage Juelich G.m.b.H. (F.R. Germany). Inst. fuer Festkoerperforschung.
Classical Potential Scattering as the Limiting Case of a Quantum Mechanical Wave Packet Theory.
F. Drepper. Dec 74, 65p
In German. U.S. Sales Only.

Descriptors: (*Potential scattering, *Wave packets), Boundary conditions, Cross sections, Equations of motion, Impact parameter, Quantum mechanics, Scattering amplitudes.

For abstract, see NSA 31 12, number 34728.

LUNP-7410 PC$2.25/MF$2.25
Tekniska Hoegskolan, Lund (Sweden). Institutionen foer Kaernfysik.
Proton Hole States Excited by Monoenergetic gamma Quanta.
C. O. Wene. 1974, 43p
U.S. Sales Only.

Descriptors: (*Scandium 45, *Photonuclear reactions), (*Vanadium 51, Photonuclear reactions), (*Cobalt 59, Photonuclear reactions), Energy levels, Copper 63, Cross sections, Gamma radiation, Mev range 10-100, Nickel 58, Protons, Spectroscopic factors, Cobalt 57, Iron 58, Nickel 62, Titanium 50.

For abstract, see NSA 31 12, number 34844.

NP-20317 PC$6.25/MF$2.25
Universidad Nacional Autonoma de Mexico, Mexico City. Facultad de Ciencias.
Resonance Properties in the Interval 4.1 < E/sub p/ < 6.1 Mev from (P,p) and (P Vector,p) Reactions on exp 18 O.
R. A. Salgado. 1974, 65p
In Spanish. U.S. Sales Only.

Descriptors: (*Oxygen 18, Proton reactions), (*Proton reactions, *Elastic scattering), (*Oxygen 19, *Isobaric analogs), (*Fluorine 19, Isobaric analogs), Angular distribution, Differential cross sections, Excitation functions, Mev range 01-10, Polarization, Polarized beams, Spin orientation, Isospin, Level widths, Parity, Resonance, Spin.

For abstract, see NSA 31 12, number 34805.

ORNL-TM-4550 PC$4.00/MF$2.25
Oak Ridge National Lab., Tenn.
Critical Experiments and the 2200 M/Sec Neutron Parameters.
R. Gwin. Jan 75, 13p
Contract W-7405-eng-26

Descriptors: (*Uranium 233, *Criticality), (*Uranium 235, Criticality), (*Neutron reactions, *Absorption), Aqueous solutions, Cross sections, Eigenvalues, Homogeneous mixtures, Hydrogen, Thermal neutrons.

For abstract, see NSA 31 12, number 34778.

ORO-4028-0021 PC$7.00/MF$2.25
Maryland Univ., College Park Dept. of Chemistry.
Research in Nuclear Chemistry. Annual Progress Report.
V. E. Jr. Viola, G. E. Gordon, and W. B. Walters. 1 Nov 74, 80p
Contract AT(40-1)-4028

Descriptors: (*Nuclear chemistry, *Research programs), (*Nuclear physics, Research pro-

grams), (*Cyclotrons, *Accelerator facilities), Activation analysis, Decay, Fission, Maryland, Nuclear reactions.

For abstract, see NSA 31 12, number 34892.

P-7975 PC$11.25/MF$2.25
Joint Inst. for Nuclear Research, Dubna (USSR).
Annual Report, 1973.
9 Jul 74, 164p
In Russian. U.S. Sales Only.

Descriptors: (*High energy physics, *Research programs), (*Nuclear physics, Research programs), (*Nuclear reactions, Research programs), (*Neutrons, Research programs), Acceleration, Data processing, Radiation protection.

For abstract, see NSA 31 12, number 34629.

PTB-ND-7 PC$4.75/MF$2.25
Physikalisch-Technische Bundesanstalt, Braunschweig (F.R. Germany). Neutronendosimetrie.
Neutron Yields from exp 7 Li(P,N) exp 7 Be, exp 51 V(P,N) exp 51 Cr, D(D,N) exp 3 He and T(P,N) exp 3 He Reactions.
M. K. Leung. Mar 74, 33p
U.S. Sales Only.

Descriptors: (*Lithium 7, Proton reactions), (*Vanadium 51, Proton reactions), (*Tritium, Proton reactions), (*Proton reactions, *Charge-exchange reactions), Energy, Energy dependence, Mev range 01-10, Neutrons, Nuclear reaction yield, Beryllium 7, Chromium 51, Helium 3, Deuterium, Deuteron reactions, One-nucleon transfer reactions, Stripping.

For abstract, see NSA 31 12, number 34791.

RLO-2225-T27-5 PC$4.00/MF$2.25
Washington Univ., Seattle Dept. of Physics.
Progress Report for Period May 15, 1974--February 5, 1975.
J. J. Lord, and R. J. Wilkes. 5 Feb 75, 14p
Contract AT(45-1)-2225

Descriptors: (*Nuclear reactions, *Research programs), Carbon, Charm particles, Chromium, Decay, Distribution, Gev range 100-1000, Multiplicity, Nuclear emulsions, Proton reactions, Silver, Tungsten.

For abstract, see NSA 31 12, number 34601.

UCRL-51306(Rev.1) PC$4.00/MF$2.25
California Univ., Livermore Lawrence Livermore Lab.
Evaluated Data Set for Tantalum.
R. J. Howerton, R. C. Haight, M. H. MacGregor, and S. T. Perkins. 27 Feb 75, 30p
Contract W-7405-eng-48

Descriptors: (*Tantalum 181, *Neutron reactions), Angular distribution, Capture, Charge-exchange reactions, Compound-nucleus reactions, Cross sections, Elastic scattering, Electrons, Energy spectra, Gamma radiation, Inelastic scattering, Internal conversion, Knock-out reactions, Multipolarity, Total cross sections, X radiation.

For abstract, see NSA 31 12, number 34930.

20I. Plasma Physics

AD-A010 567/6GA PC$3.25/MF$2.25
Cornell Univ Ithaca N Y
Spherical Electric Probe in a Continuum Gas,
P. C. T. de Boer, and G. S. S. Ludford. 12 Feb 74, 16p ARO-5329.58-M
Grants DA-ARO-D-31-124-71-G163, NSF-GP-40965
Availability: Pub. in Plasma Physics, v17 p29-43 1975.

Descriptors: *Plasmas(Physics), *Charged particles, Gas ionization, Probes(Electromagnetic), Plasma sheaths, Electron density, Continuum mechanics, Perturbation theory, Reprints.
Identifiers: Continuum gas.

Electric probes can serve as useful diagnostic tools in a slightly ionized continuum gas. If the gas is quiescent, there is a region surrounding the probe in which the charged particles owe their motion to diffusive effects. The extent of the region is determined by the rate at which ionized particles are produced: if the production reactions are assumed frozen, it extends to infinity and is three-dimensional in nature. As a consequence, the simplest geometry for the continuum electric probe with frozen chemistry is spherical.

AD-A010 726/8GA PC$7.25/MF$2.25
Magnetic Corp of America Waltham Mass
Superconducting Magnetohydrodynamic Magnet Comprehensive Testing.
Final rept. 23 Apr 73-9 May 75,
Richard J. Thome. May 75, 211p AFAPL-TR-75-21
Contract F33615-72-C-2069
See also report dated Sep 73, AD-768 626.

Descriptors: *Magnetohydrodynamics, *Electromagnets, Superconductors, Magnet coils, Winding, Test methods, Strain gages.
Identifiers: *Superconducting magnets.

Two series of tests at liquid helium temperature have been performed by Magnetic Corporation of America on a lightweight superconducting MHD magnet. The magnet was constructed by Ferranti-Packard, Ltd., as part of a joint program sponsored by the U.S. Air Force and Canadian Defense Research Board. Preparations for the tests are described as well as test results involving strain gauges, voltage distributions during quench and detection of flux changes with secondary windings. During the tests the magnet attained 1.55 T at a current level of 685 A. Recommendations for modifications to structural components are given.

AD-A010 827/4GA PC$7.50/MF$2.25
Naval Research Lab Washington D C
Radiation from Sources Moving in a Warm Magnetoplasma.
Final rept.,
Dennis John Baker. 10 Apr 75, 230p Rept no. NRL-7871

Descriptors: *Plasmas(Physics), *Magnetosphere, *Electromagnetic radiation, Boltzmann equation, Kinetic theory, Tensor analysis, Electron density, Transport properties, Numerical analysis, Coherent radiation, Theses.

The power lost through radiation by an electric charge as it spirals in a homogeneous magnetoplasma is calculated. Coherent Cerenkov radiation from a group of charges is studied by assuming the charges radiate as a single macroscopic ellipsoid of revolution having a uniform volume charge density. The total power radiated by such a macroscopic source is shown to be finite even in those cases where the refractive index is unbounded. The power radiated by electric dipole and loop antennas oriented with their axes along the magnetic field of an anisotropic plasma and moving parallel to this field are given in the form of integrals which are easily evaluated numerically. Mathematical models of the plasma dielectric tensor are derived using kinetic theory in addition to using the so-called hydrodynamic and full adiabatic theories (our Model H and A, respectively) with allowances made for the finite temperatures of both ions and electrons. Numerical results obtained using Models A and H are compared. For example, Model A predicts that in some cases a large fraction of the power radiated by a moving point charge source at frequencies near the upper hybrid resonance is in the form of thermal mode excitation. However, this 'high energy' thermal mode is missing from results obtained for the same source charge using Model H.

CEA-CONF-2887 PC$4.00/MF$2.25
CEA Centre d'Etudes Nucleaires de Saclay, 91 - Gif-sur-Yvette (France). Service de Physique Atomique.
Processes in Early Afterflows.
R. Deloche, and B. Sayer. 3p CONF-740998-1
U.S. Sales Only.

Descriptors: (*Afterglow, *Ionization), Charged particles, Electric discharges, Electric fields, Electron-atom collisions.

For abstract, see NSA 31 12, number 32700.

COO-2456-4 PC$4.00/MF$2.25
Columbia Univ., New York.
High beta Plasma Research. Progress Report, May 1, 1974--January 31, 1975.
C. K. Chu, and R. A. Gross. 1 Feb 75, 14p
Contract AT(11-1)-2456

Descriptors: (*High-beta plasma, *Research programs), (*Plasma simulation, Research programs), Boundary conditions, Equilibrium plasma, Materials testing, Plasma, Plasma instability, Shock tubes, Toroidal configuration.

For abstract, see NSA 31 12, number 32710.

EPRI-SR-9 PC$4.00/MF$2.25
Electric Power Research Inst., Palo Alto, Calif.
Laser-Fusion Program Summary Report.
L. K. Isaacson. Feb 75, 50p

Descriptors: (*Laser implosions, *Research programs), (*Laser-produced plasma, Research programs), Design, Lasers, Reviews.

For abstract, see NSA 31 12, number 32733.

LA-tr-75-5 PC$4.00/MF$2.25
Mechanism of Secondary Ion Emission.
M. E. Kishinevskii. 1973, 10p
Translated by Helen J. Dahlby from preprint IIaF--116-73.

Descriptors: (*Ion sources, *Ion emission), Hydrogen ions 1 minus, Kinetics, Plasma, Probability, Surfaces.

For abstract, see NSA 31 12, number 34454.

MPI-PAE/EXTRATERR-106 PC$5.00/MF$2.25
Max-Planck-Institut fuer Physik und Astrophysik, Garching/Muenchen (F.R. Germany). Inst. fuer Extraterrestrische Physik.
Drift Wave Instabilities in Plasmas with Shear Flow.
G. Haerendel. Nov 74, 37p
U.S. Sales Only.

Descriptors: (*Plasma microinstabilities, *Drift instability), Electric currents, Electric fields, Helmholtz instability, Ion drift, Magnetic fields, Shear.

For abstract, see NSA 31 12, number 32745.

ORO-4338-5 PC$4.50/MF$2.25
University of South Florida, Tampa Dept. of Physics.
Continuation of Research on Nonlinear Plasma Phenomena and an Investigation of

Turbulent Heating Schemes. Annual Progress Report.
W. D. Jones, and N. L. Oleson. 15 Mar 75, 27p
Contract AT(40-1)-4338

Descriptors: (*Plasma heating, *Turbulent heating), (*Plasma waves, *Nonlinear problems), Coupling, Plasma density, Plasma diagnostics, Radiowave radiation, Research programs.

For abstract, see NSA 31 12, number 32687.

RLO-2225-T28-2 PC$6.00/MF$2.25
Washington Univ., Seattle.
Interaction of Magnetically Confined Plasmas with Intense Radiation from an Electron Beam Stabilized CO sub 2 Laser. Annual Report.
G. C. Vlases. 1974, 56p

Descriptors: (*Laser-produced plasma, *Research programs), Absorption, Carbon dioxide lasers, Electron beams, Laser radiation, Magnetic fields, Plasma confinement.

For abstract, see NSA 31 12, number 32735.

UCRL-Trans-10823 PC$4.00/MF$2.25
Gosudarstvennyj Komitet po Ispol'zovaniyu Atomnoj Ehnergii SSSR, Sukhumi. Fiziko-Tekhnicheskij Inst.
Plasma Heating Associated with Development of Parametric Turbulence Near the Lower Hybrid Frequency.
R. A. Demirkhanov, G. L. Khorasanov, and I. K. Sidorova. Feb 75, 18p
Translation of SFTI--5.

Descriptors: (*Plasma heating, *Turbulent heating), (*Q devices, Turbulent heating), Electromagnetic radiation, Hybrid resonance, Parametric instabilities.

For abstract, see NSA 31 12, number 32688.

UCRL-51708 PC$4.00/MF$2.25
California Univ., Livermore Lawrence Livermore Lab.
Preparation and Fabrication of Low-Density Microcellular-Foam Laser Targets.
J. A. Rinde, and R. R. Stone. 9 Jan 75, 11p
Contract W-7405-Eng-48

Descriptors: (*Targets, *Fabrication), (*Microspheres, Fabrication), Deuterium, Laser implosions, Laser-produced plasma, Tritium.

For abstract, see NSA 31 12, number 32736.

20J. Quantum Theory

AD-A010 896/9GA PC$3.25/MF$2.25
Indiana Univ Bloomington Dept of Physics
Scattering into Cones and Flux across Surfaces,
J. M. Combes, R. G. Newton, and R. Shtokhamer. 30 Sep 74, 8p ARO-5992.82-P
Grant DA-ARO-D-31-124-72-G21
Availability: Pub. in Physical Review D, v11 n2 p366-372, 15 Jan 75.

Descriptors: *Scattering, *Surfaces, *Flux density, *Quantum theory, Fragments, Particles, Theorems, Reprints.
Identifiers: *Quantum mechanics, Cones.

The relation between the physical meaning of a nonrelativistic N-particle flux and its mathematics representation in quantum mechanics is discussed. We prove a theorem that equates the probability of finding an N-fragment system in the distant future in a given cone with the total probability that the fragments cross a distant surface subtended by the cone. Together with the scattering-into-cones theorem this result proves that the usually calculated number of fragments whose momenta in the distant future lie in a given cone is equal to the total counted number of fragments that, at any time, cross a subtended distant surface. It thus adds to both physically and mathematically cleaner underpinnings of scattering theory. (Author)

AD-A010 906/6GA PC$3.25/MF$2.25
California Univ Irvine Dept of Chemistry
Non-Radiative Transitions in the First Excited Singlet State of Perfluoro Cyclobutanone: Fluorescence Decay Times and Fluorescence Excitation Spectroscopy,
Roger S. Lewis , and Edward K. C. Lee. 26 Jun 74, 6p Rept no. A-9
Contract N00014-75-C-0813
Availability: Pub. in Jnl. of Chemical Physics, v61 n8 p3434-3438, 15 Oct 74.

Descriptors: *Butanones, *Monocyclic compounds, *Fluorescence, *Decay, Excitation, Quantum chemistry, Reprints.
Identifiers: *Cyclobutanone.

AD-A010 907/4GA PC$3.25/MF$2.25
California Univ Irvine Dept of Chemistry
Single Vibronic Level Photochemistry of NO2 in the 2491 a System,
William M. Uselman, and Edward K. C. Lee. 20 Jun 74, 5p Rept no. A-8
Contracts N00014-75-C-0813, N00014-69-A-0200-9005
Availability: Pub. in Chemical Physics Letters, v30 n2 p212-214, 14 Jan 75.

Descriptors: *Nitrogen oxides, *Dioxides, *Photochemical reactions, *Quantum chemistry, Molecular vibration, Molecular rotation, Reprints.
Identifiers: *Nitrogen dioxide.

AD-A010 908/2GA PC$3.25/MF$2.25
California Univ Irvine Dept of Chemistry
Direct and Triplet-Benzene-Sensitized Photolysis of Perfluorocyclobutanone at low Pressures,
Roger S. Lewis, and Edward K. C. Lee. 18 Jul 74, 6p Rept no. A-10
Contracts N00014-75-C-0813, N00014-69-A-0200-9005
Availability: Pub. in Jnl. of Physical Chemistry, v79 p187-191 1975.

Descriptors: *Butanones, *Monocyclic compounds, *Photolysis, Low pressure, Fluorides, Photodecomposition, Energy levels, Reprints.
Identifiers: *Cyclobutanone.

JINR-E4-8543 PC$4.00/MF$2.25
Joint Inst. for Nuclear Research, Dubna (USSR).
Evaluation of Fresnel'S Corrections to the Eikonal Approximation by the Method of Separabilization.
M. M. Musakhanov, and A. L. Zubarev. 1975, 9p
U.S. Sales Only.

Descriptors: (*Eikonal approximation, *Corrections), Glauber theory, Scattering amplitudes, Schroedinger equation, Variational methods.

For abstract, see NSA 31 12, number 35062.

JINR-P2-8349 PC$4.00/MF$2.25
Joint Inst. for Nuclear Research, Dubna (USSR). Lab. of High Energy.
Planck Constant H and Complementarity Principle in Quantum Mechanics.
M. I. Podgoretskii. 1974, 16p
In Russian. U.S. Sales Only.

Descriptors: Planck law, Quantum mechanics.

For abstract, see NSA 31 12, number 35063.

20K. Solid Mechanics

AD-A010 551/0GA PC$5.25/MF$2.25
Pennsylvania State Univ University Park Applied Research Lab
Transmissibility Across Simply Supported, Rectangular, Thin Plates with Loading Masses or Ribs.
Technical memo.,
John B. Ochs. 4 Mar 75, 121p Rept no. TM-75-43
Contract N00017-73-C-1418

Descriptors: *Plates, *Vibration, Loads(Forces), Resonant frequency, Damping.
Identifiers: *Simply supported plates.

The transmissibility across simply supported, rectangular, thin plates has been determined experimentally and compared, where possible, with the results of existing theoretical calculations. As measured, transmissibility is the magnitude of the ratio of the central sinusoidal acceleration of the plates to the rigid body sinusoidal acceleration of their boundaries. Comparison has been made between the results of transmissibility measurements across plates with central loading masses, plates with seven different straight-rib configurations, and plates with three concentric circular-rib configurations. The added mass in each case equalled the plate mass so that the effectiveness of the added mass in reducing transmissibility could be evaluated as a function of its geometry.

AD-A010 562/7GA PC$3.25/MF$2.25
Lehigh Univ Bethlehem Pa Ceramics Research Lab
Slow Crack Growth and Failure Prediction of Brittle Materials Subjected to a Transient Thermal Stress,
R. Badaliance, P. D. Hilton, and D. P. H. Hasselman. 1974, 16p ARO-10722.12-MC
Grant DA-ARO-D-31-124-73-G45
Availability: Pub. in Proceedings of an International Conference on Prospects of Fracture Mechanics, Delft University of Technology, (Netherlands), 24-28 Jun 74, p579-592.

Descriptors: *Crack propagation, *Fracture(Mechanics), *Glass, Brittleness, Thermal stresses, Rods, Heat transfer, Cracks, Stress corrosion, Numerical analysis, Reprints.

The effect of slow crack growth on the failure conditions of a brittle material subjected to a transient thermal stress in a stress-corrosive environment was investigated. A numerical analysis procedure was developed for calculating the instantaneous values for crack length and transient stress intensity factors of a glass rod subjected to a sudden decrease in ambient temperature under convective heat transfer conditions. The analysis demonstrated that slow crack growth significantly decreases the thermal conditions required for catastrophic failure. A form of crack growth instability is predicted at values of the stress intensity factor well below K sub IC, where the rate of increase of stress intensity factor is such that catastrophic failure becomes inevitable. (Author)

AD-A010 760/7GA PC$3.25/MF$2.25
Watervliet Arsenal N Y Benet Weapons Lab
Flexural and Extensional Vibrations of Simply Supported Laminated Rectangular Plates.
Technical rept.,
Charles R. Thomas. 23 Apr 74, 10p Rept no. WVT-TR-75020
Availability: Pub. in the Jnl. Acoustical Society of America, v57 n3 p655-659 Mar 75.

Descriptors: *vibration, *Plates, Flexural properties, Laminates, Rectangular bodies, Elastic properties, Microstructure, Stiffness,

Isotropism, Frequency, Differential equations, Reprints.
Identifiers: Laminated plates.

The author has previously derived an effective stiffness, velocity-corrected theory of laminated composite plates based upon a microstructure plate theory developed by C. T. Sun. This theory is now used to study the flexural and extensional vibrations of simply supported rectangular plates; comparisons will be made to similar results obtained from a reduced effective modulus or transversely isotropic plate theory. Free vibration frequency equations for simply supported edges are developed by passing solutions harmonic in both length and width through the differential equations while at the same time automatically satisfying the boundary conditions for simple supports. The variation of dimensionless frequency for such dimensionless variables is discussed and comparisons of the effective stiffness and effective modulus frequency results are made. (Author)

AD-A010 997/5GA PC$3.25/MF$2.25
Pennsylvania State Univ University Park Dept of Chemistry
Thermal Accommodation Coefficients by High Speed Vibration of Solid Samples. I. Method and Apparatus,
Richard S. Lemons, and Gerd M. Rosenblatt. 16 Aug 74, 18p ARO-4847.28-C
Grant DA-ARO-D-31-124-72-G91
See also AD-A010 998.
Availability: Pub. in Surface Science, 48 p432-448 1975.

Descriptors: *Solid state physics, Kinetic theory, Gases, Energy transfer, Heating, Emissivity, Vibration, Oxygen, Nitrogen, Argon, Platinum, Nickel, Copper, Carbon, Reprints.

A method and apparatus to determine thermal accommodation coefficients are described in which solid samples are vibrated at high velocity in the presence of a test gas at low pressure. Energy transfer between the incident gas molecules and the moving surface causes an increase in the solid temperature which is related to, and approximately proportional directly to the thermal accommodation coefficient and inversely to the emissivity.

AD-A010 998/3GA PC$3.25/MF$2.25
Pennsylvania State Univ University Park Dept of Chemistry
Thermal Accommodation Coefficients by High Speed Vibration of Solid Samples. II. Kinetic Theory of Collisions between a Rarefied Gas and an Oscillatory Surface,
Richard S. Lemons, and Gerd M. Rosenblatt. 16 Aug 74, 15p ARO-4847.29-C
Grant DA-ARO-D-31-124-72-G91
See also AD-A010 997.
Availability: Pub. in Surface Science, 48 p449-462 1975.

Descriptors: *Solid state physics, Kinetic theory, Transport properties, Rarefied gases, Kinetic energy, Oscillation, Argon, Heating, Vibration, Thermal properties, Molecules, Reprints.

Kinetic theory is used to compute the flux and relative translational kinetic energy incident upon a surface oscillating in a rarefied gas. The flux incident upon the oscillatory surface is deficient in low-velocity molecules from the gas during the reentry half of a vibration cycle, in which the surface moves into the gas, because all molecules which are to strike the oscillatory surface from the gas must cross the plane of maximum surface extension during that cycle.

AD-A010 999/1GA PC$3.75/MF$2.25
Massachusetts Univ Amherst
Time-Temperature Superposition of the Fundamental Relaxation Processes of Polyethylene,
R. S. Stein, R. S. Finkelstein, D. Y. Yoon, and C. Chang. 1974, 40p ARO-10645.1-C
Contract DAAG46-72-C-0076, Grant DA-ARO-D-31-124-72-G161
Availability: Pub. in Jnl. of Polymer Science, Symposium No. 46, p15-53 1974.

Descriptors: *Polymers, *Polyethylene plastics, *Stress relaxation, Crystals, Amorphous materials, Spherulites, Reprints.

The application of Tobolsky's time-temperature superposition principle for the stress-relaxation behavior of amorphous polymers is reviewed, and its extension to crystalline polymers and the employment of X-ray and optical methods is discussed. The desirability of applying the superposition principle to time-dependent crystal orientation functions is described. The use of those techniques for the study of the relaxation of a low-density polyethylene sample is illustrated. Spherulite orientation theory is used for analysis of the results. (Author)

AD-A011 016/3GA PC$3.75/MF$2.25
Wisconsin Univ Madison Mathematics Research Center
Creep Buckling of Imperfect Columns.
Technical summary rept.,
N. C. Huang. May 75, 28p Rept no. MRC-TSR-1544
Contract DA-31-124-ARO(D)-462

Descriptors: *Columns(Supports), *Buckling, Loads(Forces), Creep, Deformation.
Identifiers: *Creep buckling.

In this paper, a study of the creep buckling of two simple columns with geometrical imperfections associated with finite deformations has been made. The material property of the column is considered to satisfy a power law for creep deformation and a generalized Rambergy-Osgood relation for noncreep deformation. It is found that creep buckling at a finite time would exist only when the magnitude of the load is between two bounds.

AD-A011 017/1GA PC$3.75/MF$2.25
Wisconsin Univ Madison Mathematics Research Center
Minimum-Volume Design of Elastic Trusses with Deflection Constraints.
Technical summary rept.,
N. C. Huang. Mar 75, 33p Rept no. MRC-TSR-1512
Contract DA-31-124-ARO(D)-462

Descriptors: *Trusses, *Deflection, Loads(Forces), Stresses, Experimental design, Optimization.

The paper deals with the minimum-volume design of elastic truss subject to deflection constraints. The effects of inequality stress constraints and multiple loadings are examined. Examples are presented to illustrate the methods developed in the paper.

AD-A011 054/4GA PC$5.25/MF$2.25
California Univ Berkeley Structural Engineering Lab
Finite Element Formulation and Solution of Contact-Impact Problems in Continuum Mechanics.
Final rept. May 73-May 74,
Thomas J. Hughes, Robert L. Taylor, and Jerome L. Sackman. May 74, 101p Rept no. UCSESM-74-8 NCEL-CR-75.007
Contracts N62399-73-C-0023, DOT-HS-5-01132

Descriptors: *Collisions, *Impact, Finite element analysis, Finite difference theory, Boundary value problems, Continuum mechanics, Kinematics, FORTRAN.
Identifiers: FEAP 74 computer program, DOT/5M.

This report presents a general theory of contract-impact problems cast in a variational theorem suitable for implementation with the finite element method. The numerical scheme is described as is the structural analysis computer code in which it is contained.

AD-A011 103/9GA PC$4.25/MF$2.25
California Univ Berkeley Structural Engineering Lab
Finite Element Formulation and Solution of Contact-Impact Problems in Continuum Mechanics-II.
Final rept. Jul 74-Jan 75,
Thomas J. Hughes, Robert L. Taylor, and Jerome L. Sackman. Jan 75, 54p Rept no. UCSESM-75-3 NCEL-CR75.008
Contracts N62399-73-C-0023, DOT-HS-5-01132
See also report dated May 74, AD-A011 054.

Descriptors: *Collisions, *Impact, Force(Mechanics), Continuum mechanics, Finite element analysis, Kinematics, Numerical analysis.
Identifiers: DOT/4DZ/DB, DOT/5A.

Hertzian contact-impact problems are solved which demonstrate the veracity of the numerical algorithm employed. The importance of the impact and release conditions is emphasized. A methodology is developed for nonlinear contact/impact problems. The formulation is applicable to motor vehicle accident research.

NTIS/PS-75/496/0GA PC$25.00/MF$25.00
National Technical Information Service, Springfield, Va.
Finite Elements in Structural Analysis (A Bibliography with Abstracts).
Rept. for 1972-Jun 75,
David W. Grooms. Jun 75, 75p*

Descriptors: *Bibliographies, *Structural analysis, Dynamic structural analysis, Static structural analysis, Stress analysis, Vibration, Crack propagation, Deformation methods.
Identifiers: *Finite element analysis.

Finite element analysis as applied to dynamic and static problems are analyzed as well as linear and nonlinear problems. Some computer programs for finite element analysis are also presented but for a more complete listing of software developed for structural problems see NTIS/PS-75/428, Structural Mechanics Software. (Contains 70 abstracts).

N75-21668/9GA PC$4.25/MF$2.25
Martin Marietta Aerospace, Orlando, Fla.
Life Prediction of Materials Exposed to Monotonic and Cyclic Loading: Bibliography.
J. L. Carpenter, Jr., N. Moya, and W. F. Stuhrke. Jan 75, 73p NASA-CR-134751, OR-13320
Contract NAS3-17640

Descriptors: *Aerospace systems, *Bibliographies, *Structural failure, Cyclic loads, Environment effects, Life (Durability), Thermal fatigue.

For abstract, see STAR 1313

N75-21670/5GA PC$3.75/MF$2.25
National Aeronautics and Space Administration. Lewis Research Center, Cleveland, Ohio.
Stress Analysis and Stress Intensity Factors for Finite Geometry Solids Containing Rectangular Surface Cracks.
J. P. Gyekenyesi, and A. Mendelson. 1975, 31p NASA-TM-X-71694, E-8296
Conf-Proposed for Presentation at Winter Ann. Meeting of the Asme, Houston, Tex., 30 Nov. - 5 Dec. 1975.

Descriptors: *Solids, *Stress analysis, *Surface cracks, Differential equations, Stress concentration.

For abstract, see STAR 1313

N75-21672/1GA PC$4.25/MF$2.25
MacNeal-Schwendler Corp., Los Angeles, Calif.
Study of the Modifications Needed for Effective Operation Nastran on IBM Virtual Storage Computers.
Final Report.
C. W. Mccormick, and K. H. Render. Apr 75, 61p
NASA-CR-2527
Subm-Sponsored by NASA.

Descriptors: *Computer programs, *Computer storage devices, *Ibm computers, Coding, Cost estimates, Performance prediction, Time measurement.

For abstract, see STAR 1313

N75-21674/7GA PC$3.75/MF$2.25
Princeton Univ., N.J. Dept. of Aerospace and Mechanical Sciences.
A Primer for Structural Response to Random Pressure Fluctuations.
E. H. Dowell, and R. Vaicaitis. Apr 75, 41p
NASA-CR-142671, AMS-1220
Contract NGR-31-001-146, Grant NSG-1059

Descriptors: *Dynamic response, *Power series, *Pressure oscillations, *Structures, Flexible bodies, Sound transmission.

For abstract, see STAR 1313

N75-21675/4GA PC$3.75/MF$2.25
National Aeronautics and Space Administration. Lewis Research Center, Cleveland, Ohio.
Strainrange Partitioning: A Tool for Characterizing High Temperature Low Cycle Fatigue.
M. H. Hirschberg, and G. R. Halford. 1975, 48p
NASA-TM-X-71691, E-8294
Conf-Presented at the 40TH Meeting of the AGARD Structures and Materials Panel of NATO, Brussels, 13-18 Apr. 1975.

Descriptors: *Materials tests, *Mechanical properties, *Stress-strain diagrams, *Thermal fatigue, Fatigue life, High temperature tests, Strain rate, Tensile properties.

For abstract, see STAR 1313

N75-21676/2GA PC$3.25/MF$2.25
National Aeronautics and Space Administration. Langley Research Center, Langley Station, Va.
The Design and Use of an Error Correction Information System for Nastran.
D. C. Rosser, Jr.. Nov 74, 20p NASA-TM-X-72651

Descriptors: *Computer techniques, *Error analysis, *Finite element method, *Structural analysis, Data bases, Data storage, Information management, Machine oriented languages.

For abstract, see STAR 1313

N75-21677/0GA PC$4.25/MF$2.25
National Aeronautical Establishment, Ottawa (Ontario).
A Finite Element Procedure for Plates with Curved Boundaries.
T. M. Hrudey. Jan 75, 62p NRC-14575, LR-584

Descriptors: *Boundary value problems, *Curvature, *Finite element method, *Plates (Structural members), Bending, Displacement, Elastic properties, Problem solving, Structural analysis.

For abstract, see STAR 1313

N75-22187/9GA PC$4.75/MF$2.25
Martin Marietta Aerospace, Orlando, Fla.
Register of Experts for Information on Mechanics of Structural Failure.
J. L. Carpenter, Jr., and W. F. Stuhrke. Jan 75, 91p NASA-CR-134754, OR-13318
Contract NAS3-17640

Descriptors: *Indexes (Documentation), *Structural failure, Composite materials, Fracture mechanics, Life (Durability).

For abstract, see STAR 1313

RD/B/N-2785 PC$4.50/MF$2.25
Central Electricity Generating Board, Berkeley (UK). Berkeley Nuclear Labs.
Finite Element Crack Analysis Using the J-Integral Method.
B. K. Neale. Sep 73, 27p
U.S. Sales Only.

Descriptors: (*Stress analysis, *Finite element method), B codes, Computer codes, Cracks, Strains, Stresses.

For abstract, see NSA 31 12, number 32818.

WANL-TMI-841 PC$4.00/MF$2.25
Westinghouse Electric Corp., Pittsburgh, Pa. Astronuclear Lab.
Tensile Tests of Tie Rods.
H. Allison, and G. Zibritosky. 28 Oct 63, 4p

Descriptors: (*Rods, *Tensile properties), Deformation, Destructive testing, Mechanical structures, Nerva reactor, Strains, Test facilities, Yield strength.

For abstract, see NSA 31 12, number 32972.

20L. Solid-State Physics

AD-A010 544/5GA PC$3.75/MF$2.25
Naval Surface Weapons Center White Oak Lab Silver Spring Md
The Effect of Exchange on the Theory of the Order-Disorder and the Insulator-Metal Transitions in Magnetite, Fe3O4.
Final rept.,
Tomoyasu Tanaka, Charles Chen, and Louis F. Libelo. 1 Apr 75, 38p Rept no. NSWC/WOL/TR-75-41

Descriptors: *Magnetite, *Iron oxides, *Band theory of solids, Transition temperature, Phase transformations, Hartree-Fock approximation, Energy bands, Energy gap.
Identifiers: Order disorder transformations, Insulator metal transition.

Using a Hartree-Fock decoupled Hamiltonian, electronic energy bands for magnetite, Fe3O4 have been determined at temperatures in the neighborhood of the Verwey transition temperature. The cluster-variation method has been applied to determine the parameters appearing in the Hartree-Fock Hamiltonian. It was observed that the insulator-metal transition takes place at a temperature where the Verwey order is still finite although it is quite small. As long as the Verwey transition persists as a second order transition the theory here predicts two different distinct transition temperatures, one for the insulator-metal transition and the other for the order-disorder transition.

AD-A010 559/3GA PC$3.75/MF$2.25
Lehigh Univ Bethlehem Pa Center for the Application of Mathematics
Stability of an Elastic Cube under Dead Loading: Two Equal Forces.
Technical rept.,
Kn. N. Sawyers. May 75, 42p Rept no. CAM-100-22
Contract N00014-67-A-0370-0001

Descriptors: *Deformation, *Loads(Forces), Elastic properties, Incompressibility, Stresses, Differential equations, Numerical analysis.

A cube of incompressible neo-Hookean material undergoes a pure homogeneous deformation and is held in equilibrium by three specified pairs of equal and opposite forces, two of which are the same, applied normally to its faces and uniformly distributed over them. The possible equilibrium states are determined and the stability of each is studied with respect to arbitrary superposed infinitesimal deformations. The stability limits are found to be different from those obtained when only infinitesimal deformations having the same principal directions as those of the basic equilibrium state are considered. The differences arise from rotational and shearing types of instabilities that may occur in the general case. A critical inference is drawn concerning the nature of the dead loading conditions employed.

AD-A010 612/0GA PC$3.25/MF$2.25
Delaware Univ Newark Dept of Physics
Electronic States of Semiconductors with Graded Periodic Inhomogeneities,
George B. Inglis, and Ferd Williams. 22 Apr 74, 6p ARO-11097.2-P
Grant DA-ARO-D-31-124-73-G83
Availability: Pub. in Physical Review B, v11 n8 p2200-2204, 15 Mar 75.

Descriptors: *Amorphous materials, *Semiconductors, *Electronic states, Films, Perturbation theory, Spectra, Optics, Reprints.
Identifiers: Inhomogeneity.

The electronic states of amorphous semiconductors with graded globular inhomogeneities have been previously investigated using perturbation theory for extended states well within allowed bands and effective-mass theory for localized states confined to a globule. In the present analysis we obtain solutions for localized, intermediate, and extended states of systems with sinusoidal grading in one dimension, using effective-mass theory and solutions of the Mathieu equation. The states near the crests of the undulating band edge are obtained for the first time; the earlier analysis for localized states is confirmed. Fine structure in optical spectra is predicted for globular materials. Perturbation theory is used to determine the dependence of the minigaps on the grading function for multilayer films. (Author)

AD-A010 689/8GA PC$3.25/MF$2.25
IBM Thomas J Watson Research Center Yorktown Heights N Y
Optical Properties of Semiconductor Superlattice,
R. Tsu, A. Koma, and L. Esaki. 29 Jul 74, 5p
ARO-11574.9-P
Contract DAHC04-74-C-0012
Availability: Pub. in Jnl. of Applied Physics, v46 n2 p842-845 Feb 75.

Descriptors: *Semiconductors, *Reflectivity, *Refractive index, Absorption coefficients, Band theory of solids, Crystal lattices, Ternary compounds, Reprints.
Identifiers: *Gallium aluminum arsenides, *Superlattices, Absorption edges, Electron volts, Density of states, Periodic structures.

Reflectivity measurements for a GaAs-AlAs superlattice and a Ga0.5Al0.5As alloy were performed. Analyses of these results permit the determination of both refractive indices and absorption coefficients. The absorption edges for the alloy and superlattice are approximately 2 and 1.63 eV, respectively. A shift of 0.11 eV from the absorption edge of GaAs compares favorably with transport measurements showing that the lowest energy state in such a superlattice is about 0.1 eV above the bottom of the conduction band of GaAs. (Author)

AD-A010 728/4GA PC$5.75/MF$2.25
Illinois Univ Urbana Coordinated Science Lab
Acoustic Generation by Nonuniform Polarization in Ferroelectric Ceramics.
Technical rept.,
Robert Joseph Kansy, Jr. May 75, 147p Rept nos. R-681, UILU-ENG-75-2216
Contract DAAB07-72-C-0259

Descriptors: *Ferroelectric materials, Transducers, Surface waves, Electric fields, Polarization, Fabrication, Acoustic delay lines, Piezoelectricity, Theses.
Identifiers: *Acoustic surface waves, *Interdigital transducers.

The thesis is a study of acoustic generation by the interaction of a uniform a-c electric field and a nonuniform polarization in a ferroelectric ceramic plate. The nonuniform polarization is induced by the temporary application of a strong d-c electric field to an interdigital transducer deposited on the surface of an unpolarized ferroelectric ceramic plate. The effect of the polarization is described in terms of a spatially variant tensor containing the effective local values of the piezoelectric constants. This previously unpublished concept is applied to modified equations of motion for the isotropic elastic plate. Expressions are obtained for the resonant mode frequencies, excitation bandwidths and relative power levels. Experimental data are taken in the form of input impedance and delay line insertion loss versus frequency. Theoretical and experimental data are compared and found to be in good qualitative agreement.

AD-A010 766/4GA PC$3.25/MF$2.25
IBM Thomas J Watson Research Center Yorktown Heights N Y
Dielectric Instability and Breakdown in Wide Bandgap Insulators,
T. H. DiStefano, and M. Shatzkes. 11 Oct 74, 10p AFCRL-TR-75-0248
Contract F19628-73-C-0006, ARPA Order-2180
Availability: Pub. in the Jnl. of Vacuum Science and Technology, v12 n1 p37-46 Jan-Feb 75.

Descriptors: *Dielectric properties, *Breakdown(Electronic threshold), *Band theory of solids, Instability, Ionization, Crystal lattices, Thin films, Dielectric films, Phonons, Reprints.
Identifiers: *Wide bandgap insulators, *Negative resistance materials.

An impact-ionization model predicts a negative resistance type of dielectric instability and breakdown in wide bandgap insulators. The instability develops by the injection of electrons from the cathode, impact ionization of the lattice, and a distortion of the electric field which leads to a further increase in impact ionization. For the case of thin films, it is necessary to invoke an nonlocal ionization rate in order to obtain a negative resistance instability. O'Dwyer.'s avalanche theory of breakdown, which applies well to semiconductors, cannot be used to predict a negative resistance in the small multiplication limit appropriate to wide bandgap insulators. The impact-ionization model presented here depends upon two critical parameters; the ionization bandgap of the material and the electron-LO phonon scattering length. Evaluated for the exemplary case of SiO2, the model predicts a current density and an average field at breakdown which increase rapidly for film thickness below 200 A. (Author)

AD-A010 767/2GA PC$3.25/MF$2.25
Ohio State Univ Columbus Dept of Electrical Engineering
Shallow Impurity States in Semiconductors: Absorption Cross-Sections, Excitation Rates, and Capture Cross-Sections.
Journal article,
W. W. Anderson. 28 Feb 74, 13p ARL-75-0185
Contract F33615-71-C-1858
Availability: Pub. in Solid-State Electronics, v18 p235-245 1975.

Descriptors: *Semiconductors, Impurities, Absorption, Cross sections, Excitation, Wave functions, Photons, Ionization, Reprints.

Shallow impurity state wave functions are derived for both a coulomb and sigma-function binding potential within the effective mass formalism of Kohn. These wave functions, along with the Bloch functions of a perfect crystal are then used to obtain analytic expressions for photon spectral absorption cross-sections, thermal photon excitation rates, and carrier radiative capture cross-sections into the shallow centers. The calculated cross-sections are in satisfactory agreement with both magnitude and spectral shape of experimentally measured cross-ections. The absorption cross-sections are such as to make the centers very sensitive to thermal photon excitation over a wide range of temperatures or center ionization energies. Finally, it is shown that radiative carrier trapping is normally negligible for shallow centers. (Author)

AD-A010 768/0GA PC$3.25/MF$2.25
Ohio State Univ Columbus Dept of Electrical Engineering
Analysis of Passive Infrared Imaging System with IR Stimulable Phosphor.
Journal article,
W. W. Anderson. 23 Mar 74, 11p ARL-75-0184
Contract F33615-71-C-1858
Availability: Pub. in Solid-State Electronics, v18 p247-255 1975.

Descriptors: *Infrared images, *Semiconductors, Infrared scanning, Signal to noise ratio, Phosphors, Passive systems, Image converters, Zinc sulfides, Copper alloys, Lead alloys, Cross sections, Reprints.

A passive i.r. imaging system based on an i.r. stimulable phosphor is analyzed. An analytic expression for the noise equivalent temperature (NET or display signal to noise ratio (SNRD) is obtained for two characteristic photoionization cross-sections of shallow centers in semiconductors.

AD-A010 781/3GA PC$7.25/MF$2.25
Northrop Research and Technology Center Hawthorne Calif
Radiation Effects on Oxides, Semiconductors, and Devices.
Final rept. Mar 74-Jan 75,
Joseph R. Srour, Orlie L. Curtis, Jr., Siegfried Othmer, and Kuang Y. Chiu. May 75, 205p Rept no. NRTC-75-5R HDL-CR-75-171-1
Contract DAAG39-73-C-0171

Descriptors: *Semiconductors, *Semiconductor devices, *Radiation effects, Silicon, Silicon dioxide, Alumina, Oxides, Electron transport, Charge transfer, Holes(Electron deficiencies), Damage, Ionizing radiation, Metal oxide semiconductors, Radiation hardening, Gallium arsenides, Recombination reactions, Electrical properties, Capacitors, Annealing, Trapping(Charged particles).
Identifiers: Metal insulator semiconductors.

Contents: Oxide studies--Hole and electron transport in SiO2 films, Charge transport studies in SiO2: processing effects and implications for radiation hardening, Ionizing dose rate effects in MOS devices, Experiments on MOS capacitors fabricated on a p-type silicon substrate, Ion microanalyzer measurements on SiO2 films, Effects of bias polarity on current flow in SiO2 under electron beam injection, Studies of charge transport and charge buildup in pure SiO2 and Al+-implanted pure SiO2, Determination of hole mobility in SiO2 films; Semiconductor studies.

AD-A010 802/7GA PC$3.75/MF$2.25
Stanford Univ Calif Stanford Electronics Labs
Study of the Electronic Surface State of III-V Compounds.
Semi-annual technical progress rept.,
W. E. Spicer. 15 Oct 74, 36p
Contract DAAK02-74-C-0069, DARPA Order-2182
See also report dated 15 Mar 74, AD-782 058.

Descriptors: *Gallium arsenides, *Gallium antimonides, *Cesium, *Photocathodes, *Surfaces, Cesium compounds, Oxides, Infrared optical materials, Interfaces, Band theory of solids.
Identifiers: Cesium oxides, Surface states.

In the past six months work has proceeded on studies of bulk cesium oxide, and the surface of GaAs and GaSb. The overall aim of these studies is to provide a basic understanding of the surfaces of the materials used in III-V photocathodes. The authors have oxidized bulk cesium metal and find that for low oxygen exposures the surface appears to stay metallic while O(-2) ions dissolve in the bulk of the cesium. With oxidation the work function drops to a minimum of about 0.7 eV. Further oxidation raises the work function. It was found that oxidation of p type GaAs causes the bands to bend down about 0.5 eV at the surface. Work on GaSb indicates that there are neither empty nor filled surface states in the band gap.

AD-A010 884/5GA PC$3.25/MF$2.25
Utah Univ Salt Lake City
Angular Dependent Raman Scattering Studies of KH2PO4.
Technical rept.,
C. H. Wang, R. W. Grow, and M. K. Srivastava. 15 May 75, 19p Rept no. TR-9
Contract N00014-75-C-0908

Descriptors: *Raman spectra, Single crystals, Phosphates, Potassium compounds, Crystal structure.
Identifiers: *Potassium phosphates.

Raman scattering spectra of a KH2PO4 single crystal were measured at various crystal orientations relative to the incident and scattered light propogation directions. It has been found that the contribution of the long-range electrostatic interaction is less than 10% of the total scattering efficiency of the E(x) and B2(z) modes in KDP. A low frequency mode, previously predicted by group theory, was also observed for the first time.

AD-A010 889/4GA PC$3.75/MF$2.25
Northwestern Univ Evanston Ill Dept of Materials Science and Engineering
Capacitance Studies on Synthetic Phospholipid Langmuir Films.
Interim rept.,
W. L. Procarione, and J. W. Kauffman. May 75, 29p Rept no. TR-1
Contract N00014-67-A-0356-0031

Descriptors: *Phospholipids, *Capacitance, Dielectric films, Aluminum, Alumina, Membranes, Lipids, Lecithin, Thin films, Hydrocarbons, Electrical insulation, Phase transformations, Molecular structure, Temperature, Electrophysiology, Transition temperature, Hydrates, Metal oxide semiconductors, Chemical analysis, Chains.
Identifiers: *Metal insulator metal junctions, Cholesteric liquid crystals.

Synthetic phosphatidylcholine Langmuir films have been incorporated into metal-insulator-metal (MIM) thin film junctions. The capacitance characteristics of these junctions have been studied as a function of temperature, the number of lipid layers in the insulating layer, and the length of the hydrocarbon chains of the lipid molecule. The thickness of the oxide

layer on the base aluminum electrode has been determined to be approximately 40A, and its effects on the capacitance characteristics has been considered in some detail. Indications of phase transitions in the temperature dependence of the capacitance imply that the basic lamellar arrangement of the lipid molecules is retained even after the samples are subjected to a dehydrating vacuum annealing process. An examination of the effects of varying the hydrocarbon chain length and salt content of the subphase during sample fabrication showed that capacitance characteristics of the MIM junction are very sensitive to small structural changes in the insulating layer.

AD-A011 075/9GA PC$4.25/MF$2.25
Vanderbilt Univ Nashville Tenn School of Engineering
Structural Effects on Electrical Properties in Amorphous Semiconducting Materials.
Final technical rept.,
Donald L. Kinser, and Larry K. Wilson. 15 May 75, 65p
Contract DAHC04-70-C-0046

Descriptors: *Antiferromagnetism, *Semiconductors, *Chalcogens, *Phosphates, *Amorphous materials, Transition metal compounds, Electrical properties, Microstructure, Iron compounds, Titanium compounds, Arsenic compounds, Selenides, Tellurides, Oxidation, Magnetic properties, Electron paramagnetic resonance, Mossbauer effect.
Identifiers: *Amorphous semiconductors, Iron phosphates, Titanium phosphates, Mossbauer spectroscopy, Arsenic selenides, Arsenic tellurides, Manganese phosphates, Vanadium phosphates.

The report consists of two parts and appendices. In part one, the relationship between microstructural and electrical properties of semiconducting glass systems was examined. The glass systems of primary concern were the amorphous chalcogenides and the transition metal phosphates. The As2Se3-As2Te3 glasses have been characterized microstructurally, compositionally, electrically; and switching has been examined. The transition metal oxide phosphate glasses have also been microstructurally characterized as well as electrically characterized. This class of glasses has also been carefully characterized in a chemical manner. In part two, the magnetic properties of a series of transition metal phosphate glasses have been studied both experimentally and theoretically. A theoretical model for amorphous antiferromagnets such as these glasses has been proposed and tested. In addition, the advantages of magnetic experiments in studies of glass structure have been demonstrated.

AD-A011 076/7GA PC$3.75/MF$2.25
California Inst of Tech Pasadena Div of Engineering and Applied Science
On the Ellipticity of the Equations of Nonlinear Elastostatics for a Special Material.
Technical rept.,
James K. Knowles, and Eli Sternberg. Apr 75, 38p Rept no. TR-32
Contract N00014-75-C-0196

Descriptors: *Deformation, *Stress strain relations, *Elastic properties, Fracture(Mechanics), Partial differential equations, Tensor analysis, Nonlinear systems, Tension, Compression, Shear properties, Failure(Mechanics).
Identifiers: Elliptic differential equations, Strain energy, *Elastostatics.

This paper deals with the ellipticity of the equations of finite elastostatics for a compressible material that corresponds to a special choice of the strain-energy density and has received repeated attention in the literature. The possible failure of ellipticity of the appropriate system of displacement equations of equilibrium at solutions involving large deformations was suggested by certain difficulties encountered in an attempt to determine the deformations and stresses arising in such a material near the tip of a crack. It is shown here that ellipticity prevails only if the principal stretches are suitably restricted and breaks down, in particular, at a local state of uni-axial tension or compression of sufficiently severe intensity.

CEA-CONF-2831 PC$4.00/MF$2.25
CEA Centre d'Etudes Nucleaires de Fontenay-aux-Roses, 92 (France). Section d'Etude des Solides Irradies.
Dechanneling of Particles by Lattice Defects.
Y. Quere. 1974, 17p CONF-7309135-1
U.S. Sales Only.

Descriptors: (*Aluminium, *Lattice parameters), (*Alpha particles, *Channeling), Bubbles, Defects, Deformation, Dislocations, Interstitials, Physical radiation effects, Stacking faults.

For abstract, see NSA 31 12, number 35709.

CEA-CONF-2892 PC$4.00/MF$2.25
CEA Centre d'Etudes Nucleaires de Saclay, 91 - Gif-sur-Yvette (France). Service d'Electronique Physique.
Electrical Properties and Energy Levels in Electron-Irradiated n-Type Inp.
J. Leloup, H. Djerassi, and H. J. Albany. 17p CONF-740729-20
U.S. Sales Only.

Descriptors: (*Indium compounds, *Physical radiation effects), (*Phosphides, Physical radiation effects), Annealing, Carrier density, Crystal doping, Electric conductivity, Electron beams, Energy levels, Hall effect, Medium temperature, Mev range 01-10, N-type conductors, Temperature dependence.

For abstract, see NSA 31 12, number 34029.

COM-75-50326/8GA Not available NTIS
National Bureau of Standards, Washington, D.C.
Determination of Electron Attenuation Lengths in Metals: Transmission through Thin Adsorbed Films.
Final rept.,
M. Sunjic, D. Sokcevic, and J. W. Gadzuk. 1974, 4p
Pub. in Proceedings of Internation Conference on Solid Surfaces (2nd), Kyoto, Japan, 25-29 Mar 74, Japanese Jnl. of Applied Physics, supp12 p52 p753-756 1974.

Descriptors: *Plasmons, Electrons, Spectroscopy, Metals, Surface properties, Attenuation, Thin films, Electron scattering, Charged particles, Transport properties.
Identifiers: *Electron spectroscopy.

A quantitative theory of surface and bulk plasmon excitation in several electron spectroscopies (transmission, XPS, and Auger from thin film sandwiches) is presented. It is shown under what circumstances, the usual exponential attenuation law is valid.

JINR-P11-8410 PC$4.00/MF$2.25
Joint Inst. for Nuclear Research, Dubna (USSR). Lab. of Computing Techniques and Automation.
Calculation of the Bremsstrahlung Energy Spectrum from the Thin Diamond Single Crystal by the Monte Carlo Method.
N. Z. Akopov, and G. A. Ososkov. 1974, 13p
In Russian. U.S. Sales Only.

Descriptors: (*Diamonds, *Emission spectra), Bremsstrahlung, Crystals, Electron beams, Energy spectra, Monte carlo method.

For abstract, see NSA 31 12, number 35719.

N75-22103/6GA PC$3.25/MF$2.25
Kanner (Leo) Associates, Redwood City, Calif.
Electron Emission Currents of Metals Covered with Atomic Layers.
S. Wagner. Mar 75, 18p NASA-TT-F-16173
Contract NASW-2481
Tran-Transl. Into English from Wiss. Z. Univ. Rostock, Math.-Naturwiss. Reihe, Sonderh. (Rostock), V. 16, No. 7, 1967 p 887-892.

Descriptors: *Atomic structure, *Electron emission, *Emission spectra, *Semiconductors (Materials), Current density, Evaporation, Mathematical models, Thermionic converters, Work functions.

For abstract, see STAR 1313

N75-22118/4GA PC$3.25/MF$2.25
Scientific Translation Service, Santa Barbara, Calif.
Application of the Normalized Vasicek Method to Nonabsorbing Single Vapor-Deposited Layers on Glass Carriers.
J. Rassow. Apr 75, 24p NASA-TT-F-16261
Contract NASW-2483
Tran-Transl. into English from Z. Physik. (Berlin), V. 170, 1962 p 376-392.

Descriptors: *Glass, *Polarimetry, *Surface layers, *Thick films, *Vapor deposition, Evaporation, Numerical analysis, Optical properties, Refractivity, Sodium chlorides.

For abstract, see STAR 1313

N75-22158/0GA PC$3.75/MF$2.25
Alabama Univ., Huntsville. Dept. of Physics.
Evaluation of Semiconductor Specimens by X-Ray Analysis.
Final Report.
H. U. Walter. Mar 75, 38p NASA-CR-120729
Contract NAS8-29650

Descriptors: *Crystal defects, *Crystal structure, *Semiconductors (Materials), *X ray analysis, Crystal growth, Etching, Gallium arsenides, Germanium, Photovoltaic effect, Single crystals.

For abstract, see STAR 1313

20M. Thermodynamics

AD-A010 683/1GA PC$3.25/MF$2.25
California Inst of Tech Pasadena Dept of Applied Mathematics
Tubular Chemical Reactors: The 'Lumping Approximation' and Bifurcation of Oscillatory States,
Donald S. Cohen , and Aubrey B. Poore. 25 Jun 73, 15p ARO-7625.32-M
Contract DAHC04-68-C-0006, Grant NSF-GP-18471
Availability: Pub. in SIAM Jnl. of Applied Mathematics. v27 n3 p416-429 Nov 74.

Descriptors: *Tubes, *Chemical reactions, *Heat transfer, *Mass transfer, Oscillation, Perturbation theory, Mathematical models, Reprints.
Identifiers: *Chemical reactors, Bifurcation.

We study axial heat and mass transfer in a highly diffusive tubular chemical reactor in which a simple reaction is occurring. Singular perturbation techniques are used to derive approximate equations governing the situation. Attention is then focused on the bifurcation of oscillatory states from steady operating characteristics. By means of numerical calculations and phase plane illustrations we follow the bifurcated periodic solution branches along their complete lengths. (Author)

AD-A010 684/9GA PC$3.25/MF$2.25
California Inst of Tech Pasadena
Tubular Chemical Reactors with Recycle,
Herbert B. Keller. 1974, 16p ARO-7625.34-M
Contract DAHC04-68-C-0006
Availabil .y: Pub. in SIAM-American Mathematical Society Proceedings, v8 p85-98 1974.

Descriptors: *Tubes, *Chemical reactions, Stability, Recycled materials, Diffusion, Mathematical models, Biochemistry, Reprints.
Identifiers: *Chemical reactors.

Some problems concerned with the existence and stability of multiple steady states in tubular chemical reactors with recycle were studied. In an attempt to treat somewhat realistic situations an arbitrary number, say m, of reactants with possibly distinct Peclet numbers is allowed, the reactor need not be adiabatic and the reactions can be rather general. Radial gradients are not neglected and only axial diffusion is assumed. As a result of this generality the results can readily be applied to other phenomena that lead to coupled nonlinear diffusive systems. In particular, various systems involving biochemical dynamics and population dynamics can be included.

COM-75-50309/4GA Not available NTIS
National Bureau of Standards, Washington, D.C.
Deterioration of Heat Transfer to Supercritical Helium at 2.5 Atmospheres.
Final rept.,
Patricia J. Giarratano, and M. C. Jones. 1975, 5p
Pub. in International Jnl. of Heat Mass Transfer, v18 n5E p649-653 1975.

Descriptors: *Liquid helium, *Heat transfer, Supercritical flow, Cryogenics, Liquid cooling, Heat transfer coefficient, Correlation, Convection, Critical temperature.

Heat transfer has been investigated for supercritical helium at 2.5 atm flowing inside a vertical tube with inlet bulk fluid temperatures less than the transposed critical temperature. Results indicate that for high heat flux conditions, the heat transfer coefficient passes through a maximum and then deteriorates as the fluid temperature approaches the transposed critical temperature. This is contrary to the predictions of a correlation developed in an earlier study of supercritical helium heat transfer under low heat flux conditions, which only predicts enhancement in heat transfer as the transposed critical temperature is approached.The experimental data are presented and conditions under which heat transfer deterioration was observed are discussed. The probable limitations to the validity of the above mentioned heat transfer coefficient correlation, developed for a different range of experimental data, are also discussed.

N75-21556/6GA PC$3.25/MF$2.25
National Aeronautics and Space Administration. Lewis Research Center, Cleveland, Ohio.
Application of a Finite Difference Technique to Thermal Wave Propagation.
K. J. Baumeister. 1975, 24p NASA-TM-X-71690, E-8291
Conf-to Be Presented at the Heat Transfer Conf., San Francisco, 11-13 Aug. 1975; Sponsored by the Asme and the AM. Inst. Of Chem. Engr.

Descriptors: *Finite difference theory, *Thermal radiation, *Wave propagation, Difference equations, Input/output routines, Numerical analysis, Sound waves, Thermal diffusivity.

For abstract, see STAR 1313

N75-22179/6GA PC$3.25/MF$2.25
National Aeronautics and Space Administration. Lewis Research Center, Cleveland, Ohio.
Film Boiling of Mercury Droplets.
K. J. Baumeister, G. J. Schoessow, and C. E. Chmielewski. 1975, 11p NASA-TM-X-71702, E-8310
Conf-Proposed for Presentation at Natl. Heat Transfer Conf., San Francisco, Calif., 11-13 Aug. 1975.

Descriptors: *Drops (Liquids), *Film boiling, *Mercury (Metal), Evaporation, Heat transfer coefficients, Leidenfrost phenomenon.

For abstract, see STAR 1313

20N. Wave Propagation

AD-A010 780/5GA PC$4.75/MF$2.25
Technische Hochschule Graz (Austria) Institut Fuer Theoretische Physik Und Reaktorphysik
Mode Conversion and Single Mode Excitation in the Earth-Ionosphere Waveguide with Arbitrary Terrestrial Magnetic Field.
Final technical rept. 1 Jan-31 Dec 74,
Ernst Ledinegg. Jan 75, 97p
Contract DAJA37-74-C-1426
Continuation of contracts DAJA37-72-C-3796 and DAJA37-71-C-3546. See also report dated Dec 73, AD-775 477.

Descriptors: *Radio transmission, *Polar regions, Very low frequency, Electromagnetic wave propagation, Geomagnetism, Mathematical models, Ionosphere, Austria.

The present Final Report contains the continuation and extension of investigations on the propagation of electromagnetic VLF waves in polar regions. The extension considered in this report concerns mainly the terrestrial magnetic field. Part I is devoted to general theoretical considerations. It deals with the derivation of a fictitious surface impedance of the plane ionospheric boundary which mimics the influence of the ionosphere on wave propagation through the atmosphere. In Part II the surface impedance derived in Part I is applied to two waveguide models, the plane two-dimensional and the cylindrical model. In Part III the possibilities for suppressing or favouring the excitation of certain modes in the earth-ionosphere waveguide by a suitable antenna array are discussed.

AD-A010 841/5GA PC$3.25/MF$2.25
Rochester Univ N Y Dept of Physics and Astronomy
Structure of Electromagnetic Fields in Spatially Dispersive Media of Arbitrary Geometry,
G. S. Agarwal, D. N. Pattanayak, and E. Wolf. 23 Sep 74, 11p ARO-9407.30-P
Grant DAHC04-74-G-0014
Availability: Pub. in Physical Review B, v11 n4 p1342-1351, 15 Feb 75.

Descriptors: *Electromagnetic fields, *Excitons, *Dispersion relations, Equations, Electric fields, Frequency, Polarization, Coupling(Interaction), Reprints.
Identifiers: Helmholtz equation, Dispersive media.

The nature of the electromagnetic field in a spatially dispersive medium, occupying an arbitrary domain V is investigated, under conditions when spatial dispersion effects arise from the presence of an isolated exciton transition band.

AD-A011 050/2GA PC$7.00/MF$2.25
Naval Surface Weapons Center White Oak Lab Silver Spring Md
'Scattering of Electromagnetic Radiation by Apertures' V. Surface Current, Tangential Aperture Electric Field, and Back-Scattering Cross-Section for the Axially Slotted Cylinder at Normal, Symmetric Incidence.
Topical rept.,
J. N. Bonbardt, Jr., and L. F. Libelo. Apr 75, 196p Rept no. NSWC/WOL/TR-75-39

See also Number 2, AD-738 421.

Descriptors: *Electromagnetic scattering, Slots, Apertures, Cylinders, Electric fields, Backscattering, Numerical analysis, Electric current.

The report considers the thin-walled perfectly conducting, axially slotted, infinite circular cylinder, and the infinite cylindrical strip. For the case of incidence simultaneously normal to the cylinder axis and parallel to the symmetry plane bisecting the infinite axial slot, it presents the analytical formulation of the integral equations for the surface current on the conductor and also those for the tangential component of the electric field over the slot. The incident radiation is assumed merely for simplicity to be monochromatic, plane, and linearly polarized parallel to the cylinder axis.

AD-A011 052/8GA PC$3.75/MF$2.25
Naval Electronics Lab Center San Diego Calif
The Effect of the Evaporation Duct on Microwave Propagation.
Technical rept. 1 Jul 69-30 Jun 73,
J. H. Richter, and H. V. Hitney. 17 Apr 75, 35p Rept no. NELC-TR-1949

Descriptors: *Microwave transmission, Ducts, Evaporation, Mathematical models, Radio transmission, Losses, Computations, Measurement.

An analytical and experimental program is described to assess the effect of evaporation ducting on radio propagation. Extensive meteorological and radio propagation measurements were conducted and checked against computer calculations. Particular emphasis was given to the influence of antenna height on detection range under a variety of ducting conditions. A computer program has been developed which models radio propagation in the evaporation duct using mode theory.

21. PROPULSION AND FUELS

21B. Combustion and Ignition

AD-A010 568/4GA PC$3.25/MF$2.25
Cornell Univ Ithaca N Y
A New Large Damkoehler Number Theory of Fuel Droplet Burning.
J. D. Buckmaster. 22 May 74, 11p ARO-5329.63-M
Grants DA-ARO-D-31-124-71-G163, NSF-GP-40965
Availability: Pub. in Combustion and Flames, v24 p79-88 1975.

Descriptors: *Fuels, *Drops, *Combustion, Equations, Mathematical models, Burning rate, Reprints.
Identifiers: Damkoehler number.

The combustion of a liquid fuel droplet is considered when the Damkoehler number is very large, and a solution is constructed that is quite distinct from the Burke-Schumann (B-S) limit. For a certain range of parameters this solution coexists with the B-S limit and is probably unstable. However, there are other values of the parameters for which the new solution exists but the B-S solution is excluded, and in this case the new solution is probably stable. (Author)

AD-A010 930/6GA PC$3.75/MF$2.25
Instituto Nacional de Tecnica Aeroespacial Madrid (Spain)
Monopropellant Droplet Decomposition for Large Activation Energies.
Interim rept.,
Amable Linan. Dec 74, 46p Rept no. Scientific-1 AFOSR-TR-75-0817
Grant AF-AFOSR-2535-73

Descriptors: *Drops, *Decomposition, *Monopropellants, *Ignition, Vaporization, Temperature.

The quasi-steady decomposition of a monopropellant droplet in a quiescent atmosphere is analyzed for an Arrhenius reaction. An analytical relation is obtained for the pre-exponential rate constant, or the Damkohler number, as a function of the droplet vaporization rate. For low values of the ambient temperature, the curve giving the vaporization rate in terms of the Damkohler number is S shaped and, thus, exhibits ignition-extinction characteristics. The lower bend of the S curve correspond to a nearly frozen regime, under which ignition conditions occur due to the large temperature sensitivity of the reaction rate. The upper bend of the S Curve corresponds to a regime, where nearly complete decomposition of the reactant occurs when it reaches a thin reactive-diffusive zone, after crossing a transport zone. This zone becomes thin, and thus planar, for large Damkohler numbers, resulting in a droplet decomposition rate proportional its radius. For low ambient temperatures a segment of the curve between the two bends of the S curve corresponds to a regime of partial decomposition in a thin reaction zone.

COM-75-10696/3GA PC$3.75/MF$2.25
California Univ., Berkeley. Dept. of Mechanical Engineering.
Polymer Flame Retardant Mechanisms,
D. J. Holve, and R. F. Sawyer. Feb 75, 34p ME-75-2 NBS-GCR-75-40
Contract C-5-9003

Descriptors: *Polymers, *Fire resistance, *Fire resistant coatings, Stability, Extinction, Burning rate, Boric acid, Polymethyl methocrylate, Flames.

An opposed flow diffusion flame technique (Holve and Sawyer, 1974) was used to measure steady state burning rates and extinction velocities for several polymers (with and without added flame retardants) at varying oxygen concentrations in the oxidizing stream. From these results and an analysis based on extinction Damkohler numbers, overall gas phase activation energies and effective mass transfer numbers were derived. Preliminary findings for flame retarded PMMA show that while flame stability is reduced, (i.e., it takes a higher oxygen concentration to sustain combustion) the burning rate increases. In another case for particle board, boric acid flame retardant is found to reduce the burning rate, but not to have any substantial effect on flame stability. These results suggest that both types of retardants are necessary for effective flammability reduction.

21D. Fuels

PB-241 770/7GA PC$5.25/MF$2.25
Transportation Systems Center, Cambridge, Mass.
Potential for Motor Vehicle Fuel Economy Improvement. Report to the Congress.
Special congressional rept. Jun-Oct 74,
Harold G. Miller. 24 Oct 74, 123p* DOT-TSC-OST-75-9
Prepared in cooperation with Committee on Commerce (U.S. Senate), Committee on Interstate and Foreign Commerce (U.S. House), and Environmental Protection Agency, Washington, D.C.
Paper copy also available in set of 8 reports as PB-241 769-SET, PC$29.00.

Descriptors: *Fuel consumption, *Automobiles, *Energy conservation, *Automotive industry, Automobile engines, Automotive engineering, Revisions, Economic impact, Trucks, Buses(Vehicles), Safety engineering, Technology assessment, Exhaust gases, Air pollution.
Identifiers: DOT/4DZ/DB.

This report addresses the potential for fuel economy improvement for new motor vehicles and the practicability of a fuel economy improvement standard of 20% in the 1980 time frame. It includes an assessment of the technological problems of meeting any such standard, including lead times involved, test procedures required to determine compliance, economic costs and benefits, enforcement means, effect on energy and other resources, and the relationship of safety and emission standards.

PB-241 771/5GA PC$4.75/MF$2.25
Transportation Systems Center, Cambridge, Mass.
Study of Potential for Motor Vehicle Fuel Economy Improvement. Policy Assessment Panel Report No. 1.
Special congressional rept. Jun-Oct 74,
Harold G. Miller. 10 Jan 75, 90p* DOT-TSC-OST-75-10
Prepared in cooperation with Committee on Commerce (U.S. Senate), Committee on Interstate and Foreign Commerce (U.S. House), and Environmental Protection Agency, Washington, D.C.
Paper copy also available in set of 8 reports as PB-241 769-SET, PC$29.00.

Descriptors: *Fuel consumption, *Automobiles, *Energy conservation, Performance standards, Tax incentives, Assessments, Marking, Government policies.
Identifiers: DOT/4DZ/DB.

This panel report selects eight specific fuel economy improvement strategies which fall into the broad catagories of new car fuel economy labeling, government established and enforced fuel economy standards, and vehicle taxation to dissuade purchases of new automobiles with poor fuel economy. The strategies are evaluated on the basis of their impact on consumers, producers and government administration.

PB-241 772/3GA PC$3.75/MF$2.25
Transportation Systems Center, Cambridge, Mass.
Study of Potential for Motor Vehicle Fuel Economy Improvement. Safety Implications Panel Report No. 2.
Special congressional rept. Jun-Oct 74,
Harold G. Miller. 10 Jan 75, 45p* DOT-TSC-OST-75-11
Prepared in cooperation with Committee on Commerce (U.S. Senate), Committee on Interstate and Foreign Commerce (U.S. House), and Environmental Protection Agency, Washington, D.C.
Paper copy also available in set of 8 reports as PB-241 769-SET, PC$29.00.

Descriptors: *Fuel consumption, *Automobiles, *Energy conservation, Safety, Weight(Mass), Performance, Vehicular traffic control, Velocity.
Identifiers: DOT/4DZ/DB, *Compact cars.

This report contains four individual analyses related to the safety impact of increased small car usage and automobile weight reductions to improve fuel economy: (1) Fuel economy as a function of weight, performance, and driving schedule; (2) Traffic control for safety and fuel economy; (3) Weight versus safety; (4) Effects of speed limits on fuel economy and safety.

PB-241 773/1GA PC$3.75/MF$2.25
Transportation Systems Center, Cambridge, Mass.
Study of Potential for Motor Vehicle Fuel Economy Improvement. Air Quality and Emissions Panel Report No. 3.
Special congressional rept. Jun-Oct 74,
Harold G. Miller. 10 Jan 75, 42p* DOT-TSC-OST-75-12
Prepared in cooperation with Committee on Commerce (U.S. Senate), Committee on Interstate and Foreign Commerce (U.S. House), and Environmental Protection Agency, Washington, D.C.
Paper copy also available in set of 8 reports as PB-241 769-SET, PC$29.00.

Descriptors: *Fuel consumption, *Automobiles, *Energy conservation, *Air pollution.
Identifiers: DOT/4DZ/DB.

The report describes the factors which affect air quality, i.e., number and kind of stationary emission sources, the motor vehicle fleet mix, and number of vehicle miles traveled by each class of vehicle. The effect various fuel economy strategies will have on air quality are discussed.

PB-241 774/9GA PC$6.25/MF$2.25
Transportation Systems Center, Cambridge, Mass.
Study of Potential for Motor Vehicle Fuel Economy Improvement. Technology Panel Report No. 4.
Special congressional rept. Jun-Oct 74,
Harold G. Miller. 10 Jan 75, 167p* DOT-TSC-OST-75-13
Prepared in cooperation with Committee on Commerce (U.S. Senate), Committee on Interstate and Foreign Commerce (U.S. House), and Environmental Protection Agency, Washington, D.C.
Paper copy also available in set of 8 reports as PB-241 769-SET, PC$29.00.

Descriptors: *Fuel consumption, *Automobiles, *Energy conservation, *Technology assessment, Weight(Mass), Aerodynamic drag, Automotive transmissions, Motor vehicle engines, Reduction, Improvement.
Identifiers: DOT/4DZ/DB.

The authors evaluate individual technologies which could produce improved automobile fuel economy in the areas of vehicle improvement (reduced weight and aerodynamic drag), transmission improvement, engine improvements and reduced performance acceleration. Potential 1980 fuel savings are estimated for each of these technologies. The more promising of these technologies are then combined in several different configurations to produce estimates of potential automobile fuel savings possible by 1980.

PB-241 775/6GA PC$3.75/MF$2.25
Transportation Systems Center, Cambridge, Mass.
Study of Potential for Motor Vehicle Fuel Economy Improvement. Economics Panel Report No. 5.
Special congressional rept. Jun-Oct 74,
Harold G. Miller. 10 Jan 75, 37p* DOT-TSC-OST-75-14
Prepared in cooperation with Committee on Commerce (U.S. Senate), Committee on Interstate and Foreign Commerce (U.S. House), and Environmental Protection Agency, Washington, D.C.
Paper copy also available in set of 8 reports as PB-241 769-SET, PC$29.00.

Descriptors: *Fuel consumption, *Automobiles, *Energy conservation, *Economic impacts, *Automotive industry, Economic analysis.
Identifiers: DOT/4DZ/DB.

This report analyses the economic effects automobile fuel economy improvement will have on the automobile industry, the American consumer, and the U.S. economy in general.

PB-241 776/4GA PC$4.75/MF$2.25
Transportation Systems Center, Cambridge, Mass.

Study of Potential for Motor Vehicle Fuel Economy Improvement. Fuel Economy Test Procedures Panel Report No. 6.
Special congressional rept. Jun-Oct 84,
Harold G. Miller. 10 Jan 75, 82p* DOT-TSC-OST-75-15
Prepared in cooperation with Committee on Commerce (U.S. Senate), Committee on Interstate and Foreign Commerce (U. S. House), and Environmental Protection Agency, Washington, D.C.
Paper copy also available in set of 8 reports as PB-241 769-SET, PC$29.00.

Descriptors: *Fuel consumption, *Automobiles, *Energy conservation, Tests, Measurement, Standardization.
Identifiers: DOT/4DZ/DB.

This report presents the test procedures recommended for insuring compliance with fuel economy regulations. Discussions included are: (a) driving variables pertinent to the establishment of a meaningful, reproducible test methodology; (b) test and measurement methods which are applicable to fuel economy certification tests; (c) current test procedures in use by industry and the federal government, and (d) recommendations for a standardized Federal Test Procedure.

PB-241 777/2GA PC$5.25/MF$2.25
Transportation Systems Center, Cambridge, Mass.
Study of Potential for Motor Vehicle Fuel Economy Improvement. Truck and Bus Panel Report No. 7.
Special congressional rept. Jun-Oct 74,
Harold G. Miller. 10 Jan 75, 112p* DOT-TSC-OST-75-16
Prepared in cooperation with Committee on Commerce (U.S. Senate), Committee on Interstate and Foreign Commerce (U.S. House), and Environmental Protection Agency, Washington, D.C.
Paper copy also available in set of 8 reports on PB-241 769-SET, PC$29.00.

Descriptors: *Fuel consumption, *Buses(Vehicles), *Trucks, *Energy conservation, Diesel engines, Spark ignition, Cooling systems, Aerodynamics, Velocity.
Identifiers: DOT/4DZ/DB.

Special consideration is given to the potential improvement of truck and bus fuel economy implementable by the 1980 production year. Vehicles considered are those with gross vehicle weight ratings of 10,000 pounds or more.

21E. Jet and Gas Turbine Engines

AD-A011 087/4GA PC$3.25/MF$2.25
Advisory Group for Aerospace Research and Development Paris (France)
Technical Evaluation Report on Propulsion and Energetics Panel Meeting on Power Plant Controls for Aero Gas Turbine Engines (44th) held at Ustaoset Hoyfjellshotell, Norway on 9-13 September 1974.
Advisory rept.,
Klaus Bauerfeind, and C. Deane McCarthy. May 75, 15p Rept no. AGARD-AR-80
NATO Furnished. See also report dated Feb 75, AD-A009 660.

Descriptors: *Gas turbines, *Turbofan engines, *Control systems, *Meetings, Aircraft engines, Closed loop systems, Computer applications, Fuel systems, Norway.

The 44th Meeting of the Propulsion and Energetics Panel on 'Power Plant Controls for Aero Gas Turbine Engines' was held at Ustaoset Hoyfjellshotell, Norway, from 9-13 September 1974. The meeting had been organized to discuss advances and trends in the aero gas turbine engine controls together with appropriate techniques for the design of optimum controls. The meeting was divided into six sessions with a total of 29 papers. The first two sessions dealt with both steady state and transient performance of aero gas turbine engines in a general fashion to provide ground work for session three, where typical control requirements were discussed. The next two sessions were on control concepts and on simulation techniques, while the last session was devoted to control system hardware. This report gives a brief review of the papers presented and the conclusions to be drawn from them.

N75-21278/7GA PC$7.00/MF$2.25
Pratt and Whitney Aircraft, East Hartford, Conn.
Two-Stage Fan. 3: Data and Performance with Rotor Tip Casing Treatment, Uniform and Distorted Inlet Flows.
G. D. Burger, T. R. Hodges, and M. J. Keenan. Mar 75, 187p NASA-CR-134722, PWA-5239
Contract NAS3-13494

Descriptors: *Casing, *Inlet flow, *Propeller fans, *Rotor aerodynamics, Aerodynamic stalling, Inlet pressure, Performance tests, Turbofan engines.

For abstract, see STAR 1313

N75-21279/5GA PC$4.75/MF$2.25
Boeing Commercial Airplane Co., Seattle, Wash.
Titanium Honeycomb Acoustic Lining Structural and Thermal Test Report.
Technical Report, Jan. - Aug. 1974.
D. Joynes, and J. P. Balut. Dec 74, 77p NASA-CR-134783, D6-42352
Contract NAS3-17842

Descriptors: *Aircraft engines, *Honeycomb structures, *Noise reduction, *Titanium, Aluminum, Brazing, Exhaust systems, Fatigue tests, Heat transfer, Mechanical properties.

For abstract, see STAR 1313

N75-21282/9GA PC$3.75/MF$2.25
National Aeronautics and Space Administration. Lewis Research Center, Cleveland, Ohio.
Flight Investigation of Installation Effects on a Wedge Nozzle Installed on an Underwing Nacelle.
A. L. Johns. Apr 75, 40p NASA-TM-X-3207, E-8100

Descriptors: *External stores, *Flight tests, *Nacelles, Nozzle geometry, Shrouded nozzles, Wedge flow.

For abstract, see STAR 1313

N75-21283/7GA PC$3.75/MF$2.25
National Aeronautics and Space Administration. Lewis Research Center, Cleveland, Ohio.
Effect of Casing Treatment on Performance of a Multistage Compressor.
L. M. Wenzel, J. E. Moss, Jr., and C. M. Mehalic. Jan 75, 31p NASA-TM-X-3175, E-8085

Descriptors: *Compressors, *Engine tests, *J-85 engine, Aerodynamic stalling, Compressor efficiency, Compressor rotors.

For abstract, see STAR 1313

N75-21633/3GA PC$3.75/MF$2.25
National Aeronautics and Space Administration. Lewis Research Center, Cleveland, Ohio.
The Aerodynamic Design of a Compressor-Drive Turbine for Use in a 75 kw Automotive Engine.
R. J. Roelke, and K. L. Mclallin. Apr 75, 39p NASA-TM-X-71717

Descriptors: *Compressors, *Turbine engines, Aerodynamic configurations, Axial flow, Turbine blades.

For abstract, see STAR 1313

N75-21634/1GA PC$3.75/MF$2.25
Aeronautical Research Labs., Melbourne (Australia).
Constant Volume Gas Turbine Combustion Experiments with Stratified Gaseous Fuel Charges.
B. G. Catchpole, A. Runacres, and M. Zockel. Jul 74, 26p ARL/ME-NOTE-351

Descriptors: *Butterfly valves, *Combustion efficiency, *Fuel combustion, *Gas turbine engines, Combustion chambers, Combustion physics, Feasibility analysis, Fuel-air ratio, Stratification.

For abstract, see STAR 1313

N75-22178/8GA PC$3.75/MF$2.25
National Aeronautics and Space Administration. Lewis Research Center, Cleveland, Ohio.
Experimentally-Determined External Heat Loss of Automotive Gas Turbine Engine.
P. R. Meng, and R. F. Wulf. Apr 75, 36p NASA-TM-X-71709, E-8318

Descriptors: *Automobile engines, *Gas turbine engines, *Heat transfer, Air cooling, Air flow, Heat balance, Performance tests.

For abstract, see STAR 1313

21F. Nuclear Propulsion

ACF-411-251 PC$4.00/MF$2.25
ACF Industries, Inc., Albuquerque, N.Mex.
Corrosion Study on Materials Used in the Privy Roof Mounted Shield.
J. G. Hanks. 9 Aug 65, 13p

Descriptors: (*Aluminium base alloys, *Corrosion), (*Shielding materials, Corrosion), (*Water, *Corrosive effects), (*Stainless steels, Corrosion), Alloys, Cadmium, Copper, Medium temperature, Moisture, Nerva reactor, Surface coating, Zinc.

For abstract, see NSA 31 12, number 33781.

ACF-412-253 PC$4.50/MF$2.25
ACF Industries, Inc., Albuquerque, N.Mex.
Metallurgical Characteristics of Weldments in 0.750-Inch-Thick 6061 Aluminum.
A. J. Kish, and R. B. Erickson. 14 Aug 65, 30p

Descriptors: (*Aluminium alloys, *Welded joints), Heat treatments, Mechanical properties, Microstructure, Nerva reactor, Plates.

For abstract, see NSA 31 12, number 33802.

AGN-8214 PC$5.50/MF$2.25
Aerojet-General Corp., San Ramon, Calif. Nuclear Products and Services Group.
Evaluation Study of Hastelloy X as a Nuclear Cladding. Quarterly Progress Report, 1 October--31 December 1966.
Feb 67, 49p

Descriptors: (*Hastelloy x, *Testing), (*Cobalt, Testing), Bending, Creep, High temperature, Mechanical properties, Microstructure, Nerva reactor, Oxidation, Phase studies, Research programs, Temperature dependence, Tensile properties, Very high temperature.

For abstract, see NSA 31 12, number 33862.

AGN-8241 PC$4.00/MF$2.25
Aerojet-General Corp., San Ramon, Calif. Nuclear Products and Services Group.
Evaluation of Hastelloy as a Nuclear Cladding. Monthly Progress Report for August 1967.
Sep 67, 4p

Descriptors: (*Hastelloy x, *Testing), Fuel cans, Mechanical properties, Nerva reactor, Oxidation, Research programs.

For abstract, see NSA 31 12, number 33863.

AGN-8246 PC$6.00/MF$2.25
Aerojet-General Corp., San Ramon, Calif. Nuclear Products and Services Group.
Evaluation Study of Hastelloy X as a Nuclear Cladding. Quarterly Progress Report, 1 July--30 September 1967.
Nov 67, 59p
Contract AT(04-3)-368

Descriptors: (*Hastelloy x, *Corrosion resistance), (*Nerva reactor, Reactor materials), (*Reactor materials, *Research programs), Aging, Cladding, Comparative evaluations, Creep, High temperature, Oxidation.

For abstract, see NSA 31 12, number 33864.

FZK-161-1 PC$20.00/MF$2.25
General Dynamics/Fort Worth, Tex.
Investigation of Combined Effects of Radiation and Vacuum and of Radiation and Cryotemperatures on Engineering Materials. Volume I. Radiation-Vacuum Tests. Annual Report, 9 November 1961--8 November 1962.
E. E. Kerlin. 5 Jan 63, 340p

Descriptors: (*Adhesives, *Physical radiation effects), (*Thermal insulation, Physical radiation effects), (*Dielectric materials, Physical radiation effects), (*Silicones, Physical radiation effects), Acrylates, Building materials, Epoxides, Fast neutrons, Gamma radiation, Layers, Mylar, Neutron beams, Polystyrene, Reactor materials, Space propulsion reactors, Space vehicles.

For abstract, see NSA 31 12, number 34032.

FZK-161-2 PC$16.00/MF$2.25
General Dynamics/Fort Worth, Tex.
Investigation of Combined Effects of Radiation and Vacuum and of Radiation and Cryotemperatures on Engineering Materials. Volume II. Radiation-Cryotemperature Tests. Annual Report, 9 November 1961--8 November 1962.
E. T. Smith. 5 Jan 63, 260p

Descriptors: (*Adhesives, *Physical radiation effects), (*Sealing materials, Physical radiation effects), (*Thermal insulation, Physical radiation effects), (*Dielectric materials, Physical radiation effects), Building materials, Coatings, Gamma radiation, Layers, Neutron beams, Space propulsion reactors, Space vehicles, Very low temperature.

For abstract, see NSA 31 12, number 34033.

FZK-162 PC$8.25/MF$2.25
General Dynamics/Fort Worth, Tex.
Investigation of the Effects of Radiation and Cryotemperature on Engineering Materials.
E. W. Bradford. 31 May 63, 102p

Descriptors: (*Titanium base alloys, *Physical radiation effects), (*Stainless steel-17-7ph, Physical radiation effects), (*Stainless steel-347, Physical radiation effects), (*Stainless steel-304, Physical radiation effects), Hydrogen, Liquids, Nerva reactor, Polymers, Reactor materials, Teflon, Ultralow temperature.

For abstract, see NSA 31 12, number 33994.

FZK-181 PC$22.50/MF$2.25
General Dynamics/Fort Worth, Tex.
Investigation of the Effects of Radiation and Cryotemperature on Engineering Materials. Test No. 2. Control Data.
E. W. Bradford, and H. G. Thornton. 31 Mar 64, 386p

Descriptors: (*Aluminium alloys, *Tensile properties), (*Stainless steel-304, Tensile properties), (*Stainless steel-321, Tensile properties), (*Stainless steel-347, Tensile properties), Alloy-a-286, Alloy-tzm, Composite materials, Data compilation, Hastelloy c, Inconel x750, Inconel 713c, Monel, Nerva reactor, Stainless steel-440, Teflon.

For abstract, see NSA 31 12, number 33870.

FZK-310-2 PC$14.50/MF$2.25
General Dynamics/Fort Worth, Tex.
Nerva Irradiation Program. Volume II. Gtr Test 18-Materials Test.
W. D. McMillan. 1 Dec 67, 227p

Descriptors: (*Inconel 718, *Physical radiation effects), (*Inconel 625, Physical radiation effects), (*Hastelloy x, Physical radiation effects), (*Stainless steel-347, Physical radiation effects), Beryllium, Fast neutrons, Nerva reactor, Neutron beams, Reactor materials, Very low temperature.

For abstract, see NSA 31 12, number 33995.

FZK-342-1 PC$15.00/MF$2.25
General Dynamics/Fort Worth, Tex.
Nerva Materials Irradiation Program. Gtr Test 19. Volume I. Test Description and Summary of Results.
E. T. Smith. 1 Apr 68, 240p

Descriptors: (*Nerva reactor, Reactor materials), (*Reactor materials, *Physical radiation effects), Aluminium base alloys, Hastelloy c, Hastelloy x, Inconel x750, Inconel 625, Inconel 718, Low temperature, Pile neutrons, Stainless steel-347, Titanium base alloys, Udimet alloys, Ultralow temperature, Very low temperature, Waspaloy.

For abstract, see NSA 31 12, number 33996.

FZK-342-3 PC$21.00/MF$2.25
General Dynamics/Fort Worth, Tex.
Nerva Materials Irradiation Program. Gtr Test 19. Volume III. Fractography and Metallography.
Z. R. Wolanski, P. F. Ghena, and E. T. Smith. 15 May 68, 356p

Descriptors: (*Nerva reactor, *Reactor materials), (*Waspaloy, *Physical radiation effects), (*Aluminium base alloys, Physical radiation effects), (*Titanium base alloys, Physical radiation effects), Alloy-a-286, Gtr reactor, Hastelloy x, Inconel 718, Monel, Pile neutrons, Radiation hardening, Stainless steel-347, Udimet alloys, Ultralow temperature, Very low temperature.

For abstract, see NSA 31 12, number 33997.

RD/B/N-2025 PC$4.75/MF$2.25
Central Electricity Generating Board, Berkeley (UK). Berkeley Nuclear Labs.
Examination of Metallic Specimens Exposed in Fuel Element Assemblies of the Dragon Reactor.
R. J. Pearce, and R. J. Thomas. Jun 71, 31p
RPC/CM/P-(71)37
U.S. Sales Only.

Descriptors: (*Nickel base alloys, *Oxidation), (*Iron base alloys, Oxidation), (*Niobium, Oxidation), (*Dragon reactor, *Reactor cooling systems), Coolants, Corrosive effects, Heat resisting alloys, Helium, High temperature, Time dependence, Very high temperature.

For abstract, see NSA 31 12, number 34001.

RN-TM-0312 PC$4.75/MF$2.25
Aerojet-General Corp., Sacramento, Calif.
Metallurgical Investigation of Hydrogen Preheater Tube Failure.
D. J. Lamvermeyer. Mar 66, 34p

Descriptors: (*Stainless steel-321, *Erosion), (*Tubes, *Ruptures), (*Hydrogen, *Combustion), Gases, Heating, Impurities, Medium pressure, Nerva reactor, Pumps, Very high temperature, Zinc.

For abstract, see NSA 31 12, number 33784.

TID/SNA-1222 PC$5.50/MF$2.25
Aerojet-General Corp., Sacramento, Calif.
Cryogenic Tensile Properties of Selected Aerospace Materials.
W. Weleff, W. F. Emmons, and H. S. McQueen. 18 Aug 64, 47p

Descriptors: (*Titanium base alloys, *Tensile properties), (*Aluminium alloys, Tensile properties), (*Tin alloys, Tensile properties), (*Vanadium alloys, Tensile properties), Alloy-a-286, Aluminium base alloys, Hastelloy c, Inconel x750, Inconel 713c, Low temperature, Medium temperature, Nerva reactor, Stainless steel-321, Stainless steel-347, Steels, Temperature dependence, Ultralow temperature.

For abstract, see NSA 31 12, number 33887.

TID/SNA-1307 PC$4.25/MF$2.25
Aerojet-General Corp., Sacramento, Calif.
High Temperature Radiation Embrittlement of Hastelloy X, Inconel 625, and AISI 347.
C. E. Dixon, C. W. Funk, and W. Weleff. 1967, 25p

Descriptors: (*Hastelloy x, *Physical radiation effects), (*Inconel 625, Physical radiation effects), (*Stainless steel-347, Physical radiation effects), Ductility, Elongation, Embrittlement, High temperature, Nerva reactor, Neutron beams, Reactor materials, Strains, Thermal neutrons, Very high temperature.

For abstract, see NSA 31 12, number 34003.

TID/SNA-1325 PC$4.50/MF$2.25
Aerojet-General Corp., Sacramento, Calif.
Topical Report Materials and Processes Development. Contract Year 1963 (October 1962--September 1963).
18 Oct 63, 29p

Descriptors: (*Alloy-a-286, *Mechanical properties), (*Titanium base alloys, Mechanical properties), (*Aluminium base alloys, Mechanical properties), (*Nerva reactor, *Reactor materials), Brazing, Brazing alloys, Fasteners, Nozzles, Pressure vessels, Research programs, Rockets, Stainless steel-347.

For abstract, see NSA 31 12, number 33888.

TID/SNA-1339 PC$4.50/MF$2.25
Aerojet-General Corp., Sacramento, Calif.
Radiation Effects on Shear Strength of Several Alloys in a Liquid Hydrogen Environment.
W. Weleff. 13 Jun 66, 26p

Descriptors: (*Nickel base alloys, *Physical radiation effects), (*Aluminium base alloys, Physical radiation effects), (*Titanium base alloys, Physical radiation effects), (*Stainless steels, Physical radiation effects), Fast neutrons, Nerva reactor, Neutron beams, Reactor materials, Ultralow temperature.

For abstract, see NSA 31 12, number 34004.

TID/SNA-1464 PC$5.25/MF$2.25
Aerojet-General Corp., Sacramento, Calif.
Cast Aluminum Alloy Jacket Materials Development Program for the Nerva Nozzle. Second Summary Status Report for the Period 4--30 November 1962.
F. T. Inouye. Nov 62, 45p

Descriptors: (*Stainless steel-347, *Brazing), (*Aluminium base alloys, Brazing), (*Gold, *Electroplating), (*Nickel, Electroplating), Bonding, Brazing alloys, Copper, Nerva reactor, Nozzles, Silver, Tubes.

For abstract, see NSA 31 12, number 33805.

TID/SNA-1506 PC$4.00/MF$2.25
Aerojet-General Corp., Sacramento, Calif.
Shear Strength of Several Alloys at Liquid Hydrogen Temperatures.
W. Weleff, W. F. Emmons, and H. S. McQueen. 1964, 18p

Descriptors: (*Aluminium base alloys, *Shear properties), (*Titanium alloys, Shear properties), (*Stainless steel-304, Shear properties), (*Stainless steel-321, Shear properties), Alloy-a-286, Hastelloy c, Inconel x750, Nerva reactor, Stainless steel-17-7ph, Stainless steel-347, Stainless steel-410, Steel-astm-a350, Very low temperature.

For abstract, see NSA 31 12, number 33889.

TID/SNA-1561 PC$4.00/MF$2.25
Aerojet-General Corp., Sacramento, Calif.
Radiation Effects on Materials at Liquid Hydrogen Temperature.
C. E. Dixon, W. Weleff, and C. W. Funk. 20p

Descriptors: (*Aluminium base alloys, *Physical radiation effects), (*Stainless steel-347, Physical radiation effects), (*Stainless steel-410, Physical radiation effects), (*Alloy-a-286, Physical radiation effects), Alloy-d-979, Ductility, Fast neutrons, Hastelloy c, Inconel x750, Nerva reactor, Neutron beams, Shear, Titanium base alloys, Very low temperature, Yield strength.

For abstract, see NSA 31 12, number 34005.

TID/SNA-976 PC$14.75/MF$2.25
General Dynamics/Fort Worth, Tex.
Nerva Components Irradiation Program. Volume V. Astr Tests 4, 4A, and 5.
J. W. Guinn, C. G. Pou, and J. S. Wachowski. 11 Feb 65, 231p
Contract AF 29(601)-6213

Descriptors: (*Bearings, *Physical radiation effects), Nerva reactor, Performance testing, Reactor materials, Turbines.

For abstract, see NSA 31 12, number 34002.

WANL-TME-1605 PC$6.25/MF$2.25
Westinghouse Electric Corp., Pittsburgh, Pa. Astronuclear Lab.
Consolidation of Reconstituted Pyrolytic Graphite into Thermal Insulating Shapes.
J. S. Blay. Apr 67, 63p

Descriptors: (*Pyrolytic carbon, *Fabrication), (*Nerva reactor, *Thermal insulation), Bonding, Graphite, Hydrogen, Layers, Thermodynamic properties, Vapor deposited coatings, Very high temperature.

For abstract, see NSA 31 12, number 34041.

WANL-TME-1992 PC$6.50/MF$2.25
Westinghouse Electric Corp., Pittsburgh, Pa. Astronuclear Lab.
Erosion of Grafoil Insert. Development Test Report. Data Item T-119.
Feb 70, 68p

Descriptors: (*Graphite, *Erosion), (*Hydrogen, *Corrosive effects), Depressurization, Foils, Gas flow, Gases, Medium pressure, Medium temperature, Nerva reactor, Reactor materials, Sheets, Thermal insulation.

For abstract, see NSA 31 12, number 34042.

WANL-TME-891 PC$6.25/MF$2.25
Westinghouse Electric Corp., Pittsburgh, Pa. Astronuclear Lab.
Structural Graphites with High Thermal Expansion.
V. Kachur. 9 Sep 64, 63p

Descriptors: (*Graphite, *Physical properties), (*Nerva reactor, *Reactor materials), Compression strength, Density, Electric conductivity, Flexural strength, Tensile properties, Thermal expansion.

For abstract, see NSA 31 12, number 34040.

WANL-TMI-1403 PC$4.00/MF$2.25
Westinghouse Electric Corp., Pittsburgh, Pa. Astronuclear Lab.
Development Program for Carbon Products Division High Cte Graphite Flour.
F. P. Kirkhart. 10 Feb 65, 10p

Descriptors: (*Fuel elements, *Extrusion), (*Graphite, *Fabrication), Chemical preparation, Matrix materials, Nerva reactor, Particle size, Physical properties, Porosity, Powders, X-ray diffraction.

For abstract, see NSA 31 12, number 33893.

WANL-TMI-1470 PC$4.00/MF$2.25
Westinghouse Electric Corp., Pittsburgh, Pa. Astronuclear Lab.
Preliminary Test Results on Beryllium High Strain Fatigue Test (Emi-82).
I. N. Kallin. 18 May 65, 6p

Descriptors: (*Beryllium, *Fatigue), Compression, Nerva reactor, Neutron reflectors, Reactor materials, Strains, Tensile properties, Thermal shock, Young modulus.

For abstract, see NSA 31 12, number 33894.

WANL-TMI-1542 PC$4.00/MF$2.25
Westinghouse Electric Corp., Pittsburgh, Pa. Astronuclear Lab.
Failure Mode Analysis of the Te Module.
F. Ottenheimer, and G. L. Wagner. 22 Sep 65, 17p

Descriptors: (*Thermoelectric materials, *Erosion), Dielectric materials, Electric conductors, Failures, Nerva reactor, Thermal insulation, Thermoelectric generators.

For abstract, see NSA 31 12, number 34047.

WANL-TMI-1693 PC$4.00/MF$2.25
Westinghouse Electric Corp., Pittsburgh, Pa. Astronuclear Lab.
Static Tension Tests on Hollow Tie Rods: Part No. 979D144-H03-E.
T. F. Hengstenberg. 18 Jul 66, 1p

Descriptors: (*Inconel 718, *Tensile properties), Elongation, Fracture properties, Nerva reactor, Rods, Yield strength.

For abstract, see NSA 31 12, number 33897.

WANL-TMI-1703 PC$4.00/MF$2.25
Westinghouse Electric Corp., Pittsburgh, Pa. Astronuclear Lab.
Q. C. Tensile Test on Inconel 718 Tie Rods. Part No. 945C568-H01-K.
T. F. Hengstenberg. 9 Sep 66, 1p

Descriptors: (*Inconel 718, *Tensile properties), Elongation, Fracture properties, Nerva reactor, Rods, Yield strength.

For abstract, see NSA 31 12, number 33898.

WANL-TMI-1774 PC$4.00/MF$2.25
Westinghouse Electric Corp., Pittsburgh, Pa. Astronuclear Lab.
Vapor Deposited Rhenium Coated Tungsten Cups.
N. P. Spofford. 21 Apr 67, 4p

Descriptors: (*Nerva reactor, *Reactor components), (*Tungsten, *Carburization), (*Rhenium, *Deposition), Materials testing, Metallurgy, Vapor deposited coatings.

For abstract, see NSA 31 12, number 32823.

WANL-TMI-1784 PC$4.00/MF$2.25
Westinghouse Electric Corp., Pittsburgh, Pa. Astronuclear Lab.
Carbide Composition Cups, Ultimate Strength.
N. P. Spofford. 5 May 67, 1p

Descriptors: (*Nerva reactor, *Reactor components), (*Carbides, *Compression strength), Foils, Materials testing.

For abstract, see NSA 31 12, number 32976.

WANL-TMI-1938 PC$4.00/MF$2.25
Westinghouse Electric Corp., Pittsburgh, Pa. Astronuclear Lab.
Radial Seal Test Results.
L. P. Morgan. 13 Sep 68, 2p

Descriptors: (*Nerva reactor, Seals), (*Seals, *Leak testing), Performance.

For abstract, see NSA 31 12, number 32824.

WANL-TMI-860 PC$4.00/MF$2.25
Westinghouse Electric Corp., Pittsburgh, Pa. Astronuclear Lab.
Results of Tests to Evaluate Helical Coil Inserts for Repair of Graphite Threads.
11 Nov 63, 10p

Descriptors: (*Machine parts, *Testing), Graphite, Machining, Nerva reactor, Repair.

For abstract, see NSA 31 12, number 32973.

WANL-TMI-879 PC$4.00/MF$2.25
Westinghouse Electric Corp., Pittsburgh, Pa. Astronuclear Lab.
Exposure of Various Materials to Liquid Hydrogen.
J. M. Edmiston. 2 Dec 63, 7p

Descriptors: (*Nylon, *Stability), (*Tubes, Stability), (*Strain gages, Stability), (*Polymers, Stability), Hydrogen, Liquids, Nerva reactor, Reactor materials, Ultralow temperature.

For abstract, see NSA 31 12, number 34044.

WANL-TMI-912 PC$4.00/MF$2.25
Westinghouse Electric Corp., Pittsburgh, Pa. Astronuclear Lab.
Analysis of Oralloy Wire Activations in Pax.
D. J. Diamond. 31 Dec 63, 4p

Descriptors: (*Uranium alloys, *Physical radiation effects), (*Aluminium base alloys, Physical radiation effects), (*Zero power reactors, *Power density), Binary alloy systems, Enriched uranium, Flux density, Nerva reactor, Neutron flux, Radioactivation.

For abstract, see NSA 31 12, number 34006.

WANL-TMI-945 PC$4.00/MF$2.25
Westinghouse Electric Corp., Pittsburgh, Pa. Astronuclear Lab.
Graphite Thread Strength Using Heli-Coil and Tap-Lok Insert Repair Procedure.
F. M. Kotulak. 14 Feb 64, 8p

Descriptors: (*Nerva reactor, *Neutron reflectors), (*Graphite, *Mechanical properties), Fasteners, Stresses.

For abstract, see NSA 31 12, number 34045.

WANL-TNR-033 PC$15.50/MF$2.25
Westinghouse Electric Corp., Pittsburgh, Pa. Astronuclear Lab.
Materials for Design, Nerva Nuclear Subsystem.
Mar 62, 246p

Descriptors: (*Nerva reactor, Reactor materials), (*Reactor materials, *Research programs), Aluminium base alloys, Bearings, Beryllium, Capsules, Casting, Chemical properties, Compacting, Fabrication, Graphite, Lithium hydrides, Mechanical properties, Melting, Neutron reflectors, Physical properties, Physical radiation effects, Shielding materials, Stainless steels, Thermodynamic properties.

For abstract, see NSA 31 12, number 33779.

WANL-TR-6541 PC$4.00/MF$2.25
Westinghouse Electric Corp., Pittsburgh, Pa. Astronuclear Lab.
Trip to Battelle Memorial Institute, Columbus, Ohio.
H. Y. Spitz. 22 Oct 70, 5p

Descriptors: (*Nerva reactor, *Materials testing), (*Test facilities, *Performance), Friction, Wear.

For abstract, see NSA 31 12, number 32825.

WANL-TR-6559 PC$4.00/MF$2.25
Westinghouse Electric Corp., Pittsburgh, Pa. Astronuclear Lab.
Trip Report to Warren, Ohio (Meeting: Coordination Group for Military Handbook 5).
E. L. Layland. 17 Nov 70, 12p

Descriptors: (*Aircraft, Building materials), (*Alloys, *Fracture properties), (*Building materials, Fracture properties), Fatigue, Meetings, Nerva reactor.

For abstract, see NSA 31 12, number 33901.

WANL-TR-6584 PC$4.00/MF$2.25
Westinghouse Electric Corp., Pittsburgh, Pa. Astronuclear Lab.
Trip Report to Oak Ridge National Laboratory, Oak Ridge, Tennessee.
P. A. Stancampiano. 25 Jan 71, 5p

Descriptors: (*Graphite, *Fractures), (*Nerva reactor, *Nuclear fuels), Stress analysis.

For abstract, see NSA 31 12, number 34048.

WANL-TR-6626 PC$4.00/MF$2.25
Westinghouse Electric Corp., Pittsburgh, Pa. Astronuclear Lab.
Trip Report to Wnco.
W. F. Brizes, and D. G. Miller. 28 Apr 71, 2p

Descriptors: (*Fuel elements, *Coatings), (*Zirconium carbides, *Industrial radiography), (*Furnaces, *Design), Composite materials, Cracks, Graphite, Hydrogen, Nerva reactor, Optical microscopy, Removal, Surface coating, Very high temperature.

For abstract, see NSA 31 12, number 33726.

WANL-TR-6649 PC$4.00/MF$2.25
Westinghouse Electric Corp., Pittsburgh, Pa. Astronuclear Lab.
Trip Report to Abar Corporation.
W. F. Brizes, and E. M. Duran. 11 Jun 71, 2p

Descriptors: (*Zirconium carbides, *Leaching), Furnaces, Hydrogen, Nerva reactor, Recommendations.

For abstract, see NSA 31 12, number 33727.

WANL-TR-6659 PC$4.00/MF$2.25
Westinghouse Electric Corp., Pittsburgh, Pa. Astronuclear Lab.
Trip Report to Battelle Memorial Institute, Columbus, Ohio.
P. S. Gaal. 12 Jul 71, 3p

Descriptors: (*Graphite, *Friction), Hydrogen, Nerva reactor, Testing.

For abstract, see NSA 31 12, number 34049.

WANL-TR-6686 PC$4.00/MF$2.25
Westinghouse Electric Corp., Pittsburgh, Pa. Astronuclear Lab.
Trip Report to Los Alamos Scientific Laboratory, Los Alamos, New Mexico.
A. J. Pereira, and F. J. Ruyak. 1 Dec 71, 4p

Descriptors: (*Nerva reactor, *Fuel elements), Combustion, Extrusion, Fabrication, Lasl, Machining, Safety.

For abstract, see NSA 31 12, number 33807.

WANL-TR-6692 PC$4.00/MF$2.25
Westinghouse Electric Corp., Pittsburgh, Pa. Astronuclear Lab.
Trip Report to Pbrl.
J. A. DeMastry. 13 Jan 72, 3p

Descriptors: (*Alloy-a-286, *Corrosion), (*Graphite, *Tensile properties), Capsules, Cryogenics, Nerva reactor, Thermal diffusivity.

For abstract, see NSA 31 12, number 33780.

WANL-TR-6694 PC$4.00/MF$2.25
Westinghouse Electric Corp., Pittsburgh, Pa. Astronuclear Lab.
Trip Report to Alcoa Extrusion Plant, Lafayette, Indiana.
J. B. McAndrew. 21 Jan 72, 2p

Descriptors: (*Aluminium base alloys, *Extrusion), Nerva reactor.

For abstract, see NSA 31 12, number 33902.

21G. Reciprocating Engines

AD-A010 986/8GA PC$3.25/MF$2.25
National Research Council of Canada Ottawa (Ontario) Div of Mechanical Engineering
The Calibration of a Deutz F8L413 Diesel and Development of an On-Board BHP-Indicator.
Test rept.,
W. S. Heggie. Feb 75, 25p Rept nos. DME-MET-515, ISSN-0077-555X NRC-14649

Descriptors: *Air cushion vehicles, *Diesel engines, Fuel consumption, Fuel injection, Pressure, Calibration, Horsepower, Canada.
Identifiers: F-8L413 diesel engines, *Brake horsepower.

The calibration of a Deutz F8L413 diesel engine, emphasizing characteristics pertinent to the levitation of an Air Cushion Vehicle is described, together with the development of an output indicating device to be used aboard the craft. The opportunity was also taken to install NRC developed transducers for recording cylinder and fuel injection pressure-time phenomena, with the object of subjecting them to field endurance tests. Output and fuel consumption compared reasonably with manufacturer's data and a horsepower readout system was developed, based on fuel rack position and rotational speed.

21H. Rocket Motors and Engines

N75-21357/9GA PC$6.25/MF$2.25
Auburn Univ., Ala. Engineering Experiment Station.
A Monte Carlo Investigation of Thrust Imbalance of Solid Rocket Motor Pairs.
Final Report.
R. H. Sforzini, W. A. Foster, Jr., and J. S. Johnson, Jr.. Nov 74, 171p NASA-CR-120700
Contract NCA8-77-MOD-12

Descriptors: *Monte carlo method, *Rocket thrust, *Solid propellant rocket engines, Computer programs, Fortran, Rocket engine cases, Space shuttles.

For abstract, see STAR 1313

PAT-APPL-570 123/GA PC$3.25/MF$2.25
Department of the Navy Washington D C
Rollonet Assembly.
Patent Application,
Robert A. Gould. Filed 18 Apr 75, 7p Rept no.
Government-owned invention available for licensing. Copy of application available NTIS.

Descriptors: *Propellant tanks, *Expulsion bladders, Liquid rocket propellants, Diaphragms(Mechanics), Pistons, Pressure, Patents.
Identifiers: *Patent applications, PAT-CL-222-386-5, Rollonets.

The patent application discloses a rollonet designed to provide positive displacement of liquid rocket propellants for missile tankage comprising an inner and outer diaphragm each in the form of a continuous cylinder with a piston head therebetween. Gas pressure acting on the piston head imparts an axial thrust on the prerolled portions of the inner and outer cylinders, causing them to roll through 180 degrees away from the tank wall in a progressive manner.

21I. Rocket Propellants

AD-A010 731/8GA PC$4.75/MF$2.25
Thiokol Corp Brigham City Utah Wasatch Div
Chemical Structural Aging Studies on an HTPB Propellant.
Final rept.,
L. H. Layton. Apr 75, 89p Rept no. TWR-75065
AFRPL-TR-75-13
Contract F04611-71-C-0049

Descriptors: *Aging(Materials), *Solid propellants, *Solid rocket propellant binders, *Polybutadiene, Reaction kinetics, Mechanical properties, Curing.

An accelerated aging study has been performed with an HTPB (hydroxy terminated polybutadiene) propellant having formulation number TP-H1139. An aging model has been suggested to describe the aging effects on the chemical reaction kinetics in the binder and the resulting

mechanical properties. The aging model has been used to make long time equivalent aging properties predictions from short time thermally accelerated aging results. To accomplish the development of an aging model, measurements were made to determine the reaction chemistry in the binder and the corresponding mechanical properties. It was necessary to separate the binder from the solids in the cured propellant and to perform chemical analyses on the sol and gel fractions of the binder.

22. SPACE TECHNOLOGY

22A. Astronautics

N75-21303/3GA PC$3.25/MF$2.25
National Aeronautics and Space Administration. Ames Research Center, Moffett Field, Calif.
The Background for Skylab Experiment T-002, Manual Navigation Sightings.
R. J. Randle, and S. W. Powers. Mar 75, 23p NASA-TM-X-62420, A-6004

Descriptors: *Astronavigation, *Manual control, *Skylab program, Human factors engineering, Manned space flight.

For abstract, see STAR 1313

N75-21304/1GA PC$5.25/MF$2.25
Martin Marietta Corp., Baltimore, Md.
Earth Resources Experiment Package Sensor Performance Evaluation. Volume 2: S191.
Final Report.
G. P. Kenney. 2 Jan 75, 102p NASA-CR-141735, MSC-05546-VOL-2
Contract NAS8-24000

Descriptors: *Erep, *Remote sensors, *Skylab program, Calibrating, Ground truth, Performance tests, Statistical analysis.

For abstract, see STAR 1313

N75-21305/8GA PC$7.50/MF$2.25
Kanner (Leo) Associates, Redwood City, Calif.
Space: Road Without End.
A. G. Nikolayev. Apr 75, 237p NASA-TT-F-16214
Contract NASW-2481
Tran-Transl. Into English of the Book "Doroga Bez Kontsa" Moscow, Molodaya Guardiya Press, 1974 270 p.

Descriptors: *Astronaut performance, *Astronaut training, *Cosmonauts, *Space exploration, Manned space flight, Soyuz spacecraft, U.s.s.r. space program.

For abstract, see STAR 1313

N75-21306/6GA PC$4.25/MF$2.25
Scientific Translation Service, Santa Barbara, Calif.
Cosmonautics: Present and Future (Based on Material from the Foreign Press).
L. E. Levant. Apr 75, 73p NASA-TT-F-16227
Contract NASW-2483
Tran-Transl. Into English of the Book "Kosmonavtika: Sostoyaniye I Perspektivy (Po Materialam Zarubezhnoy Pechati)" Moscow, Znaniye, 1974 p 2-64.

Descriptors: *Nasa programs, *Space exploration, *Space programs, Artificial satellites, Manned space flight, Space probes.

For abstract, see STAR 1313

N75-21307/4GA PC$2.05/MF$2.25
National Aeronautics and Space Administration, Washington, D.C.
Exploration of the Solar System.
A. Henderson, Jr., and J. Grey. 1974, 72p NASA-EP-122
Rean-Reprinted.

Descriptors: *Solar system, *Space exploration, Asteroids, Comets, Economic factors, Mission planning, Planets, Technology utilization.

For abstract, see STAR 1313

N75-21308/2GA PC$3.25/MF$2.25
National Aeronautics and Space Administration. Lyndon B. Johnson Space Center, Houston, Tex.
Apollo Experience Report: Safety Activities.
C. N. Rice. Apr 75, 18p NASA-TN-D-7950, JSC-S-422

Descriptors: *Apollo project, *Flight safety, *Mission planning, *Safety management, Confidence limits, Extravehicular activity, Tradeoffs.

For abstract, see STAR 1313

N75-21309/0GA PC$10.50/MF$2.25
Scientific Translation Service, Santa Barbara, Calif.
The Years of the Space Era.
A. N. Ponomarev. Apr 75, 411p NASA-TT-F-16103
Contract NASW-2483
Tran-Transl. Into English of the Book "Gody Kosmicheskoy Ery" Moscow, Military Press, 1974 p 1-289.

Descriptors: *Apollo spacecraft, *Salyut space station, *Soyuz spacecraft, *Space exploration, Life support systems, Manned space flight, Spacecraft design, U.s.s.r. space program.

For abstract, see STAR 1313

N75-21310/8GA PC$3.25/MF$2.25
National Aeronautics and Space Administration. Lyndon B. Johnson Space Center, Houston, Tex.
Apollo Experience Report: Guidance and Control Systems; Lunar Module Mission Programer.
J. A. Vernon. Apr 75, 12p NASA-TN-D-7949, JSC-S-414

Descriptors: *Lunar module, *Mission planning, *Remote control, Design analysis, Spacecraft control, Spacecraft guidance.

For abstract, see STAR 1313

N75-21311/6GA PC$3.25/MF$2.25
National Aeronautics and Space Administration. Lyndon B. Johnson Space Center, Houston, Tex.
Apollo Experience Report: Command and Service Module Sequential Events Control Subsystem.
G. W. Johnson. Apr 75, 24p NASA-TN-D-7951, JSC-S-436

Descriptors: *Apollo project, *Command service modules, *Sequential control, Ground support equipment, Launch escape systems, Logic circuits, Performance tests.

For abstract, see STAR 1313

N75-21312/4GA PC$5.75/MF$2.25
National Aeronautics and Space Administration. Goddard Space Flight Center, Greenbelt, Md.
Ballistic Intercept Missions to Comet Encke.
Final Report of the Comet Encke Ballistic Mission Engineering Panel.
M. Mumma. Mar 75, 129p NASA-TM-X-72542

Descriptors: *Ballistic trajectories, *Comets, *Mission planning, *Trajectory analysis, Cost effectiveness, Energy requirements, Payloads, Spacecraft design.

For abstract, see STAR 1313

N75-21314/0GA PC$12.25/MF$2.25
National Aeronautics and Space Administration. Lyndon B. Johnson Space Center, Houston, Tex.
Synopsis of the APOLLO Program Activities and Technology for Lunar Exploration.
Apollo Program Summary Report.
Apr 75, 502p NASA-TM-X-68725, JSC-09423

Descriptors: *Apollo project, *Flight crews, *Lunar exploration, *Lunar module, *Spacecraft configurations, Biomedical data, Flight characteristics, Launch vehicles, Launching sites, Mission planning, Performance tests.

For abstract, see STAR 1313

N75-21315/7GA PC$3.25/MF$2.25
National Aeronautics and Space Administration, Washington, D.C.
Before the Meeting in Space.
V. A. Shatalov. Apr 75, 9p NASA-TT-F-16319
Tran-Transl. Into English from Novoye Vremya (Ussr), No. 1, Jan. 1975 p 20-24.

Descriptors: *Apollo soyuz test project, *Spacecraft docking, Flight crews, International cooperation, Mission planning.

For abstract, see STAR 1313

N75-21322/3GA PC$3.75/MF$2.25
Hughes Aircraft Co., El Segundo, Calif. Space and Communications Group.
Experiment Definition Phase Shuttle Laboratory Ldrl 10.6 Experiment.
Quarterly Report, 26 Jun. - 26 Sep. 1974.
15 Oct 74, 45p NASA-CR-143709, D0824
Contract NAS5-20018

Descriptors: *Experimental design, *Laser applications, *Space shuttles, Earth orbits, Error analysis, Ground stations, Mission planning, Payloads.

For abstract, see STAR 1313

N75-21323/1GA PC$3.75/MF$2.25
George Washington Univ., Washington, D.C. Science Communication Div.
Scientific Publications and Presentations Relating to Planetary Quarantine. Volume 5: The 1974 Supplement.
F. D. Bradley. May 75, 43p NASA-CR-142648, GWU-SCD-75-07P
Contract NASW-2768

Descriptors: *Bibliographies, *Planetary quarantine, Environmental control, Exobiology, Indexes (Documentation).

For abstract, see STAR 1313

N75-21332/2GA PC$3.75/MF$2.25
Alabama Univ., Huntsville.
Educational Planning for Utilization of Space Shuttle (Ed-Piuss). Executive Summary: Identification and Evaluation of Educational Uses and Users for the Sts.
H. A. Engle, and D. L. Christensen. Feb 75, 41p NASA-CR-120727
Contract NAS8-30737

Descriptors: *Education, *Programs, *Space shuttles, Information dissemination, Public relations.

For abstract, see STAR 1313

N75-21339/7GA PC$5.25/MF$2.25
Westinghouse Electric Corp., Baltimore, Md. Systems Development Div.
Analysis of Rae-1 Inversion.
Final Report.
D. A. Hedland, and P. K. Degonia. Nov 74, 114p
NASA-CR-143697
Contract NAS5-20083-2

Descriptors: *Satellite attitude control, *Spacecraft maneuvers, *Spacecraft performance, Computerized simulation, Dynamic response, Tail assemblies.

For abstract, see STAR 1313

N75-22192/9GA PC$5.75/MF$2.25
Environmental Research Inst. of Michigan, Ann Arbor.
Some Economic Benefits of a Synchronous Earth Observatory Satellite.
Final Report, 30 Jun. - 30 Sep. 1974.
R. K. Battacharyya, J. S. Greenberg, D. S. Lowe, and I. J. Sattinger. Sep 74, 145p NASA-CR-143636, ERIM-107400-3-F
Contract NAS5-20021
Subm-Prepared Jointly with Econ, Inc.

Descriptors: *Cost effectiveness, *Data acquisition, *Satellite observation, *Synchronous satellites, Agriculture, Crop growth, Technology utilization, Weather forecasting.

For abstract, see STAR 1313

N75-22193/7GA PC$3.25/MF$2.25
Environmental Research Inst. of Michigan, Ann Arbor. Infrared and Optics Div.
Some Economic Benefits of a Synchronous Earth Observatory Satellite.
Executive Summary, 30 Jun. - 30 Sep. 1974.
D. S. Lowe, I. J. Sattinger, J. S. Greenberg, and R. K. Bhattacharyya. Sep 74, 12p NASA-CR-143635, ERIM-107400-4-X
Contract NAS5-20021
Subm-Prepared Jointly with Econ, Inc.

Descriptors: *Cost effectiveness, *Data acquisition, *Satellite observation, *Synchronous satellites.

For abstract, see STAR 1313

N75-22255/4GA PC$4.25/MF$2.25
Kanner (Leo) Associates, Redwood City, Calif.
Modern Achievements of Cosmonautics.
B. Petrov, and K. Bushuyev. 14 Apr 75, 71p
NASA-TT-F-16221
Contract NASW-2481
Tran-Transl. Into English of the Book "Sovremennyye Dostizheniya Kosmonavtiki Sbornik" Moscow, Znaniye, 1973 p 1-64.

Descriptors: *Astronautics, *Lunar exploration, *Space exploration, *U.s.s.r. space program, Automatic test equipment, Computers, Experimental design, International cooperation, Lunokhod lunar roving vehicles, United states of america.

For abstract, see STAR 1313

22B. Spacecraft

AD-A010 595/7GA PC$5.25/MF$2.25
Aerospace Corp El Segundo Calif
Work/Energy Principles Applied to a Deadband Attitude Control System to Analyze Bending Limit Cycles.
Final rept.,
Frank Loesch, and Calvin Hecht. 21 Mar 75, 104p Rept no. TR-0075(5450-21)-1 SAMSO-TR-75-121
Contract F04701-74-C-0075

Descriptors: *Spacecraft, *Attitude control systems, Bending moments, Oscillation, Resonant frequency, Damping, Rocket nozzles.

An attitude control system used on a flexible spacecraft is analyzed by applying work/energy and impulse/momentum principles. The elements of one channel of control include a rate gyro; electronic components for integration, summing, filtering and switching; and gas thrusters controlled by solenoid valves. The switching device is analyzed as a standard nonlinear element with deadband and hysteresis. The solenoid time delay nonlinearity treatment accounts for the fact that no thrust occurs for short duration commands. The analysis evaluates the work done on the spacecraft by the thrusters. This work input is equated to the increase of system kinetic energy plus the structural damping dissipation.

AD-A010 917/3GA PC$4.25/MF$2.25
Federal Aviation Administration Washington D C
Memorandum of Understanding on a Joint Program of Experimentation and Evaluation Using an Aeronautical Satellite Capability between the United States Department of Transportation, Federal Aviation Administration, the European Space Research Organisation (ESRO), and the Government of Canada.
International agreement rept. 1974-1984.
2 Aug 74, 69p

Descriptors: *Navigation satellites, *International relations, Communication equipment, Very high frequency, L band, Air traffic, Satellite communications, Canada, United States government, Agreements.
Identifiers: DOT/4IZ/ID, DOT/4DZ/DY, AEROSAT satellites.

An international Memorandum of Understanding (MOU) on the JOINT AEROSAT EVALUATION PROGRAM was signed by the FAA Administrator on May 9, 1974 and by the Acting Director-General of ESRO and the Canadian Ambassador to France on August 2, 1974. The MOU package includes the MOU document (18 pp.), related exchange of correspondence (4 pp.), and two integral Annexes (38 and 7 pp. each). The MOU consists of 18 articles which: define objectives and organization of major elements of the program; specify financing policies, satellite deployment, utilization of AEROSAT capability, exchange of test results, and rationale for broadening participation by other Sovereign States; and provide for MOU termination, MOU amendment, procedures for handling disputes and exemption from taxes and customs duties. The exchange of correspondence between FAA and ESRO is concerned with the meaning and scope of the MOU. The major Annex contains the AEROSAT Performance Specification, which assumes the use of L-band between satellites and aircraft. The minor Annex defines the Added Experimental Capability: this is intended to provide FAA with a direct comparison between VHF communication channels and L-band communication channels.

AD-A011 082/5GA PC$3.25/MF$2.25
Royal Aircraft Establishment Farnborough (England)
Space Vehicles Launched During 1973 and 1974.
Technical memo.,
J. A. Pilkington. Jan 75, 13p Rept no. RAE-TM-Space-219 DRIC-BR-46337
Supersedes report dated Jan 74, AD-780 724.

Descriptors: *Spacecraft, *Space objects, Spacecraft debris, Space probes, Manned spacecraft, Apogee, Perigee, Great Britain, Ephemerides.
Identifiers: *Spacecraft trajectories.

RAE Technical Report 73006 lists all space vehicles successfully launched before 31 December 1972. This Memorandum, which supersedes Technical Memorandum Space 205, extends the tabulation to the end of 1974, and gives amendments to Technical Report 73006.

AD-A011 084/1GA PC$3.25/MF$2.25
Royal Aircraft Establishment Farnborough (England)
Work in UK on the Applications of Solar Cells in Space,
F. C. Treble. Dec 74, 16p Rept no. RAE-TR-74159 DRIC-BR-44998

Descriptors: *Solar cells, *Photovoltaic effect, Scientific satellites, Spacecraft components, Silicon, Cadmium sulfides, Reviews, Great Britain.
Identifiers: Ariel 3 satellite.

British efforts and achievements in the field of photovoltaic solar energy conversion in space over the past 14 years are reviewed. The satellites powered by British solar cells are listed and the Ariel 3 array is described in detail by way of an introduction to the subject. Silicon cells of conventional thickness have been developed to a conversion efficiency exceeding 11.5% and thin cells with a superior power-to-weight ratio have been developed and manufactured in pilot production. Other achievements are a cheaper and better type of glass coverslip, an ultra-thin integral glass coating and lightweight flexible cadmium sulfide cells. In anticipation of future multikilowatt power requirements, a prototype lightweight deployable array embodying advanced concepts has been built and qualified for prolonged operation in the geostationary orbit.

N75-21329/8GA PC$6.25/MF$2.25
Boeing Aerospace Co., Seattle, Wash.
Radiation and Shielding Study for the International Ultraviolet Explorer.
Final Report.
M. Baze, R. H. Firminhac, W. E. Horne, R. C. Kennedy, and P. R. Measel. Oct 74, 153p NASA-CR-143711, D180-18486-1
Contract NAS5-20038

Descriptors: *Iue, *Radiation damage, *Radiation shielding, Radiation protection, Reliability engineering, Spacecraft design.

For abstract, see STAR 1313

N75-21340/5GA PC$7.25/MF$2.25
Grumman Aerospace Corp., Bethpage, N.Y.
Composite Reinforced Propellant Tanks.
Final Report.
L. D. Brown, M. J. Martin, B. J. Aleck, and R. Landes. Feb 75, 203p NASA-CR-134726
Contract NAS3-14368

Descriptors: *Composite materials, *Propellant tanks, *Space shuttles, Aluminum alloys, Design analysis, Honeycomb structures, Low cost, Pressure vessels, S glass, Stiffening, Weight analysis.

For abstract, see STAR 1313

N75-21341/3GA PC$4.25/MF$2.25
National Aeronautics and Space Administration. Marshall Space Flight Center, Huntsville, Ala.
Preliminary Vibration, Acoustic, and Shock Design and Test Criteria for Components on the Heao-a Spacecraft.
Apr 75, 61p NASA-TM-X-64919

Descriptors: *Equipment specifications, *Heao, *Performance tests, *Spacecraft components, Acoustic properties, Shock tests, Vibration tests.

For abstract, see STAR 1313

N75-21342/1GA PC$13.25/MF$2.25
Chrysler Corp., New Orleans, La. Space Div.
Subsonic and Transonic Aerodynamic Characteristics Associated with Variations in the Geometry of the Forward Portion of Irregular Planform Wings on a .01875 Scale Lo-100 Langley Concept Space Shuttle Orbiter in the Langley 8 Foot Tpt (La7b).
J. E. Vaughn, and D. E. Poucher. Mar 73, 590p NASA-CR-141512, DMS-DR-2091
Contract NAS9-13247

Descriptors: *Aerodynamic characteristics, *Space shuttle orbiters, *Wing planforms, Angle of attack, Mach number, Reynolds number, Sweep angle, Transonic wind tunnels, Wing flow method tests.

For abstract, see STAR 1313

N75-21343/9GA PC$3.75/MF$2.25
National Aeronautics and Space Administration. Lyndon B. Johnson Space Center, Houston, Tex.
An Automatic Data System for Vibration Modal Tuning and Evaluation.
R. A. Salyer, E. J. Jung, Jr., S. L. Huggins, and B. L. Stephens. Apr 75, 44p NASA-TN-D-7945, JSC-S-435

Descriptors: *Data systems, *Digital systems, *Servomechanisms, *Structural vibration, Harmonic excitation, Orthogonality, Systems engineering.

For abstract, see STAR 1313

N75-21344/7GA PC$4.25/MF$2.25
Chrysler Corp., New Orleans, La. Space Div.
Results of Investigation on an 0.004-Scale 140C Modified Configuration Space Shuttle Vehicle Orbiter Model (74-0) in the NASA/Langley Research Center Hypersonic Nitrogen Tunnel (OA89).
P. J. Hawthorne. Mar 75, 66p NASA-CR-141513, DMS-DR-2214
Contract NAS9-13247

Descriptors: *Aerodynamic configurations, *Hypervelocity wind tunnels, *Space shuttle orbiters, Directional stability, Lateral stability, Longitudinal stability.

For abstract, see STAR 1313

N75-21345/4GA PC$5.25/MF$2.25
Essex Corp., Huntsville, Ala.
A Study of Payload Specialist Station Monitor Size Constraints.
M. Kirkpatrick, III, N. L. Shields, Jr., and T. B. Malone. Feb 75, 120p NASA-CR-120731, H75-10
Contract NAS8-30545

Descriptors: *Display devices, *Monitors, *Size determination, *Space shuttle orbiters, Alphanumeric characters, Data acquisition, Images, Target recognition.

For abstract, see STAR 1313

N75-21346/2GA PC$5.75/MF$2.25
Harris Corp., Melbourne, Fla. Electronic Systems Div.
Study of Space Shuttle Orbiter System Management Computer Function. Volume 1: Analysis, Baseline Design.
Final Report.
Feb 75, 147p NASA-CR-141758, REPT-9330-75-005-VOL-1
Contract NAS9-13887

Descriptors: *Computer techniques, *Management information systems, *Space shuttle orbiters, *Systems analysis, Experimental design, Flight crews, Performance prediction, Reliability analysis.

For abstract, see STAR 1313

N75-21347/0GA PC$4.75/MF$2.25
Harris Corp., Melbourne, Fla. Electronic Systems Div.
Study of Space Shuttle Orbiter System Management Computer Function. Volume 2: Automated Performance Verification Concepts.
Final Report.
Feb 75, 99p NASA-CR-141759, REPT-9330-75-005-VOL-2
Contract NAS9-13887

Descriptors: *Computer techniques, *Management information systems, *Space shuttle orbiters, Computer programming, Data smoothing, Data storage, Performance prediction, Systems analysis.

For abstract, see STAR 1313

N75-21348/8GA PC$4.75/MF$2.25
Chrysler Corp., New Orleans, La. Data Management Services.
Space Shuttle Vehicle Ferry Configuration Afterbody Fairing Effects on 140A/B Orbiter Aerodynamic Characteristics Using an .0405 Scale Model Orbiter (43-0) in the Rockwell International 7.75 X 11 Ft Low Speed Wind Tunnel (OA123).
R. C. Mennell. Apr 75, 80p NASA-CR-141526, DMS-DR-2202
Contract NAS9-13247

Descriptors: *Afterbodies, *Low speed wind tunnels, *Space shuttle orbiters, Aerodynamic characteristics, Lateral stability.

For abstract, see STAR 1313

N75-21349/6GA PC$11.50/MF$2.25
Chrysler Corp., New Orleans, La. Space Div.
Results of an Investigation Elevon Hinge Moments and Dual Panel Elevon Effectiveness Using an .0405-Scale Model (16-0) of the Configuration 140C Space Shuttle Orbiter in the Rockwell International Nasi Low Speed Wind Tunnel (Oa119b).
R. C. Mennell. Apr 75, 458p NASA-CR-141524, DMS-DR-2203
Contract NAS9-13247

Descriptors: *Elevons, *Low speed wind tunnels, *Space shuttle orbiters, *Torque, *Wind tunnel tests, Aerodynamic forces, Ailerons, Data reduction, Flapping hinges, Stability derivatives, Tables (Data).

For abstract, see STAR 1313

N75-21350/4GA PC$10.25/MF$2.25
Chrysler Corp., New Orleans, La. Space Div.
Wind Tunnel Tests of an 0.019-Scale Space Shuttle Integrated Vehicle -2A Configuration (Model 14-Ots) in the NASA Ames 8 by 7 Foot Unitary Wind Tunnel (Ia12c), Volume 1.
R. B. Hardin, and R. R. Burrows. Apr 75, 382p NASA-CR-141518, DMS-DR-2065-VOL-1
Contract NAS9-13247

Descriptors: *Exhaust gases, *Space shuttle orbiters, *Torque, *Wind tunnel tests, Data reduction, Flow visualization, Nozzle design, Pressure distribution, Tables (Data).

For abstract, see STAR 1313

N75-21351/2GA PC$21.25/MF$2.25
Chrysler Corp., New Orleans, La. Data Management Services.
Wind Tunnel Tests of an 0.019-Scale Space Shuttle Integrated Vehicle -2A Configuration (Model 14-Ots) in the NASA Ames 8 X 7 Foot Unitary Wind Tunnel, Volume 2.
R. B. Hardin, and R. R. Burrows. Apr 75, 991p NASA-CR-141519, DMS-DR-2065-VOL-2
Contract NAS9-13247

Descriptors: *Plumes, *Pressure distribution, *Space shuttle orbiters, *Wind tunnel tests, Data reduction, Flow visualization, Force distribution, Graphs (Charts), Tables (Data), Torque, Wing panels.

For abstract, see STAR 1313

N75-21352/0GA PC$25.25/MF$2.25
Chrysler Corp., New Orleans, La. Data Management Services.
Wind Tunnel Tests of an 0.019-Scale Space Shuttle Integrated Vehicle -2A Configuration (Model 14-Ots) in the NASA Ames 8 X 7 Foot Unitary Wind Tunnel, Volume 3.
R. B. Hardin, and R. R. Burrows. Apr 75, 1079p NASA-CR-141520, DMS-DR-2065-VOL-3
Contract NAS9-13247

Descriptors: *Plumes, *Pressure distribution, *Space shuttle orbiters, *Wind tunnel tests, Data reduction, Flow visualization, Force distribution, Tables (Data), Torque, Wing panels.

For abstract, see STAR 1313

N75-21359/5GA PC$6.25/MF$2.25
Grumman Aerospace Corp., Bethpage, N.Y.
Development of Technology for Fluid-Structure Interaction Modeling of a 1/8-Scale Dynamic Model of the Shuttle External Tank (Et). Volume 1: Technical Report.
Final Report.
M. Bernstein, R. Coppolino, J. Zalesak, and P. W. Mason. Aug 74, 174p NASA-CR-132549-1
Contract NAS1-10635
Seri-2.

Descriptors: *Computer programs, *External stores, *Space shuttles, *Structural analysis, Dynamic models, Hydroelasticity, Spacecraft configurations.

For abstract, see STAR 1313

N75-21360/3GA PC$11.25/MF$2.25
Grumman Aerospace Corp., Bethpage, N.Y.
Development of Technology for Fluid-Structure Interaction Modelling of a 1/8-Scale Dynamic Model of the Shuttle External Tank (Et). Volume 2: Supporting Data Appendixes a Through C.
Final Report.
M. Bernstein, R. Coppolino, J. Zalesak, and P. W. Mason. Aug 74, 436p NASA-CR-132549-2
Contract NAS1-10635
Seri-2.

Descriptors: *Computer programs, *External stores, *Space shuttles, *Structural analysis, Dynamic models, Hydroelasticity, Spacecraft configurations.

For abstract, see STAR 1313

N75-22191/1GA PC$4.25/MF$2.25
Mathematica, Inc., Princeton, N.J.
Economic Analysis of New Space Transportation Systems: Executive Summary.
31 May 71, 70p NASA-CR-143705
Contract NASW-2081

Descriptors: *Economic analysis, *Space shuttles, *Space transportation, Cost effectiveness, Economic factors.

For abstract, see STAR 1313

22C. Spacecraft Trajectories and Reentry

N75-21317/3GA PC$4.25/MF$2.25
Smithsonian Astrophysical Observatory, Cambridge, Mass.
On the Tesseral-Harmonics Resonance Problem in Artificial-Satellite Theory.
Special Report.
B. A. Romanowicz. 28 Mar 75, 55p NASA-CR-142672, SAO-SPECIAL-REPT-365
Contract NGR-09-015-002

Descriptors: *Artificial satellites, *Equations of motion, *Geopotential, *Harmonic motion, *Resonance, Lie groups, Satellite perturbation.

For abstract, see STAR 1313

N75-21318/1GA PC$5.25/MF$2.25
Analytical Mechanics Associates, Inc., Seabrook, Md.
Hiltop Supplement: Heliocentric Interplanetary Low Thrust Trajectory Optimization Program, Supplement 1.
F. I. Mann, and J. L. Horsewood. Dec 74, 105p NASA-CR-143699, REPT-74-30
Contract NAS5-21963

Descriptors: *Computerized simulation, *Interplanetary trajectories, *Low thrust propulsion, Computer programming, Interplanetary spacecraft, Solar electric propulsion, Solar orbits, Trajectory optimization.

For abstract, see STAR 1313

N75-21319/9GA PC$3.25/MF$2.25
International Business Machines Corp., Houston, Tex. Federal Systems Div.
lop Modeling Study.
Final Report.
26 Mar 75, 6p NASA-CR-141745, REPT-75-SS-0582
Contract NAS9-14444

Descriptors: *Computer programming, *Flight control, *Orbital mechanics, Flight mechanics, Systems engineering.

For abstract, see STAR 1313

N75-21337/1GA PC$4.25/MF$2.25
Rome Univ. (Italy).
Stability of Flexible Spacecrafts.
P. Santini. Feb 75, 58p PREPRINT-5
Conf-Presented at the 25TH Intern., Astronautical Congr., Amsterdam, 30 Sep. - 5 Oct. 1974.

Descriptors: *Gravitational fields, *Spacecraft stability, Elastic deformation, Equations of motion, Harmonic functions, Spacecraft motion, Structural reliability, Vibration mode.

For abstract, see STAR 1313

N75-21776/0GA PC$9.25/MF$2.25
National Aeronautics and Space Administration. Wallops Station, Wallops Island, Va.
Summary of Skylab S-193 Altimeter Altitude Results.
J. T. Mcgoogan, C. D. Leitao, and W. T. Wells. Feb 75, 324p NASA-TM-X-69355

Descriptors: *Altimeters, *Ocean bottom, *Orbit calculation, *Skylab program, Error analysis, Ocean surface, Pointing control systems, Topography, Tracking networks.

For abstract, see STAR 1313

22D. Spacecraft Launch Vehicles and Ground Support

N75-21330/6GA PC$10.25/MF$2.25
National Aeronautics and Space Administration. Lewis Research Center, Cleveland, Ohio.
Titan/Centaur T/C-1 Post Flight Evaluation Report.
Apr 75, 389p 0NASA-TM-X-71692, 0E-8293

Descriptors: *Centaur launch vehicle, *Postflight analysis, *Titan 1 icbm, Design analysis, Mission planning, Systems engineering.

For abstract, see STAR 1313

N75-21335/5GA PC$5.75/MF$2.25
Jet Propulsion Lab., Calif. Inst. of Tech., Pasadena.
Tracking and Data System Support for the Pioneer Project. Volume 2: Pioneer 11 Prelaunch Planning Through Second Trajectory Correction, to 1 May 1973.
W. R. Barton, and R. B. Miller. 15 Mar 75, 142p 0NASA-CR-142698, 0JPL-TM-33-584-VOL-2
Contract 0NAS7-1000
Seri-3.

Descriptors: *Data acquisition, *Ground operational support system, *Mission planning, *Pioneer 11 space probe, Deep space instrumentation facility, Flight characteristics, Flight control, Spacecraft launching, Spacecraft tracking.

For abstract, see STAR 1313

N75-21358/7GA PC$3.75/MF$2.25
National Aeronautics and Space Administration. Lewis Research Center, Cleveland, Ohio.
Results of TC-1 Boost Pump Icing Tests in the Space Power Facility.
L. C. Gentile, and R. J. Walter. Feb 75, 44p 0NASA-TM-X-71671, 0E-8170

Descriptors: *Centaur launch vehicle, *Failure analysis, *Pumps, *Titan launch vehicles, Acceleration (Physics), Performance, Test facilities.

For abstract, see STAR 1313

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